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A NON-SURGICAL TREATISE

ON

DISEASES OF THE

PROSTATE GLAND AND ADNEXA

BY

GEORGE WHITFIELD OVERALL, A. B., M. D.

CHICAGO

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PREFACE TO SECOND EDITION.

The early exhaustion of the first large edition of this little book is very flattering to the author. Profiting by the many inquiries from readers of the first edition upon different subjects, prompted the author in revising to make plain those points which were clear only to specialists.

Many inquiries were made regarding the treatment of stricture, which exists as one of the frequent complications, which has induced the writer also to add his method of treatment in this edition. A just criticism was made of the book, by one of our leading medical journals, that "The book was replete upon the non-surgical treatment of diseases of the genito-urinary organs, except that the high frequency currents were not mentioned." The author's excuse was, that up to the time of the issue of the first edition, he had not had sufficient experience with high frequency and high potential currents to justify the expressing of an opinion of its utility in the treatment of these diseases; and, too, there had not been anything published, either in this country or Europe, worthy of notice upon the subject. During the past year he has had some remarkable results from the applications of high frequency and high potential, which are herein given in detail.

It has also been gratifying to the author, to note the large number of physicians throughout the world commending the bold stand taken against the reckless and indiscriminate use of the knife. In a short extract of an address delivered by one of the most world-renowned physicians of Europe, Sir Frederick Trevis, is quoted in "The Young Man," under the heading, "Brilliant Surgeons Not Wanted." Among other things, this distinguished physician said, *"Indeed, of all desperately dangerous persons, the brilliant surgeon is the most lamentable."* This is in accord with the late sentiments expressed by the supremely great Professor A. Jacobi of New York, and the famous surgeon, Sir William Hingston of Montreal.

INTRODUCTION.

In presenting this book to the profession, the author has, by avoiding theoretical discussion, endeavored to give a plain, practical and concise summary of the methods and results of the non-surgical treatment of Diseases of the Prostate Gland and their sequelæ as demonstrated by more than twenty years of clinical experience.

Some of the matter contained herein has heretofore appeared in the "Mississippi Valley Medical Journal" of March, 1883, and August, 1887; "Medical Mirror" of April, 1896, and the "Journal of the American Medical Association" of January 21, 1899, etc.

A little over a quarter of a century ago the author completed his course of medical instruction under two of America's greatest surgeons, viz., Professors S. D. Gross and Joseph Pancoast. The teachings in vogue at that time (and there has been little improvement since) regarding the treatment of prostatic diseases were with sounds, the knife, the Bottini cautery, etc. Having followed the teachings of these eminent surgeons for some years thereafter with very unsatisfactory results, I began experimenting with local and constitutional medication, electrolysis and cataphoresis, with varied results. At times I would have the most "happy hits," to be followed by an egregious failure. From time to time I devised and perfected instruments with which to apply the combined properties of medicines, electrolysis and cataphoresis for the purpose of stimulating vaso-motor contraction, reliev-

ing thereby congestion and inflammation, dissipating morbid tissue and chemically decomposing or breaking up lime or earthy concretions that form in the ducts and follicles of the prostate.

I do not wish to convey the idea that I limit the treatment entirely to medicines, electrolysis, cataphoresis, etc., as there are some few cases in which the use of the knife becomes indispensable. I am fully aware of the incredulity of the profession regarding electrolytic treatment, since electricity has been so long in the hands of empirics. It is also true that electricity, like most potent therapeutic remedies, has been no exception to the rule of having had over-enthusiastic advocates who, at first, when its principles were little known, and before it had been placed upon a systematic basis, claimed for it properties beyond its field of utility, and would supplant therefor every other mode of treatment.

There are others who, from lack of knowledge of the science of electricity (due to the fact that it was not taught in the medical colleges at the time they graduated), are prejudiced against its use in any form or for any purpose. They are content to grope in the old, beaten path, however unsatisfactory may be the result.

I regret to have to state that the large majority of works published upon electro-therapeutics are based upon theory or are mere compilations, unreliable in their teachings. Dr. S. H. Morrell in the "Times and Register," March 16, 1895, on "A Plunge into Electro-therapeutics," gives some wholesome advice to beginners, which thoroughly accords with my views. He says: "If you wish to acquire skill in the use of electricity, don't set about it alone and don't rely on what you find in text books. If you can induce a reliable expert to take you as a student for a few months, do so, no matter what it costs. As

there are various branches of electrical work in which special technique is employed, for instance, in genito-urinary and gynecological practice, you should obtain a short course of practical instruction in each. When you have devoted six months to an apprenticeship of this kind you will have laid the foundation for ultimate success."

While the use of electricity is harmless in the hands of competent and experienced operators, yet I have seen some serious results follow its application, even by intelligent and prominent physicians who were not familiar with the principles of electro-physics and methods of electrolysis. It requires experience and tact as well as knowledge to succeed in the treatment of these complicated diseases, just as it does in any other line of special practice.

In brief, I shall state that after many years of research, I have been enabled to devise both ways and means by which to reach directly the seat of the disease.

The past decade has been made memorable by the stand taken by some of our most distinguished medical and surgical teachers, in favor of conservatism against the indiscriminate use of the knife. Prominent among these I may mention the venerable Professor A. Jacobi of New York, one of the most profoundly erudite men in the medical profession, and whose experience extends over half a century in active practice. In an address delivered by him at the International Congress at Rome, April 4, 1894, on "Non-Nocere" (Do no harm), he said: *"The relative impunity of operative interference, accomplished by modern asepsis and antisepsis, has developed an undue tendency to, and rashness in, handling the knife. The hands take too frequently the place of brains. Who does not know that the alleged safety in operating tempts some of our skilled operators and the credulous public into useless, or even contraindicated procedure?"*

In the dedicatory address delivered in the Senn Hall, December 17, 1902, by Sir William Hingston, Professor of Clinical Surgery at Laval University, Montreal, he gave warning that the surgeon's knife may be used too frequently. In part he said: *"The immunity with which the most formidable operations are now performed has given confidence—might I not say a recklessness, possibly —which renders the staying hand of the physician of priceless value. Especially is this true when, as it sometimes happens, the inexperienced surgeon hurriedly resorts to a tentative operation to establish a diagnosis where one more experienced would see no reason for the procedure. I have more than once observed the meddlesomeness of a surgeon to be in direct ratio to the measure of his inexperience."*

Damage once done to the prostate by the knife is irreparable. "Better bear the ills we have than fly to those we know not of."

THE AUTHOR.

CHICAGO, ILL., Nov. 1, 1903.

CHAPTER I.

THE NON-SURGICAL TREATMENT OF DISEASES OF THE PROSTATE GLAND AND ADNEXA.

Of the various classes of diseases from which men suffer, none is of more frequent occurrence, none has more baffled the skill of the physician, or tried the patience of the sufferer, than that of the prostate. The frequency with which this gland is affected has been variously estimated by genito-urinary specialists; some holding that from twenty-five to fifty per cent of men suffer from its disease, others claiming that it is an exception to find a man past forty with a healthy prostate gland.

When we note the highly sensitive organization of the gland, its psycho-sexual relation, its exposed position to the bladder, rectum and seminal vesicles, and the fact that it is pierced by the urethra and ejaculatory ducts, and that, moreover, it is frequently subject to excessive tax or abuse, we cannot wonder at the frequent functional or organic diseases incident thereto, the various nervous disturbances arising therefrom, and, owing to its inaccessibility, the obstacles to be overcome in its treatment.

The prostate is a musculo-glandular organ enveloped in a fibrous capsule. It is situated at and embraces the neck of the bladder. It is about the size and shape of a horse chestnut, with its base directed towards the bladder and its apex in front. It lies upon the rectum, being separated therefrom only by loose fascia. Its transverse diameter at the base measures one and one-half inches, its antero-posterior diameter (which corresponds with the length of

the prostatic urethra) is one and one-quarter inches, and its depth three-quarters of an inch.

It consists of two lateral lobes of equal size. Some writers mention a third or middle lobe, but this is regarded by most authorities (and it will be so considered by the author) only as a pathological condition. The urethra passes through the anterior third of the gland, though occasionally the posterior.

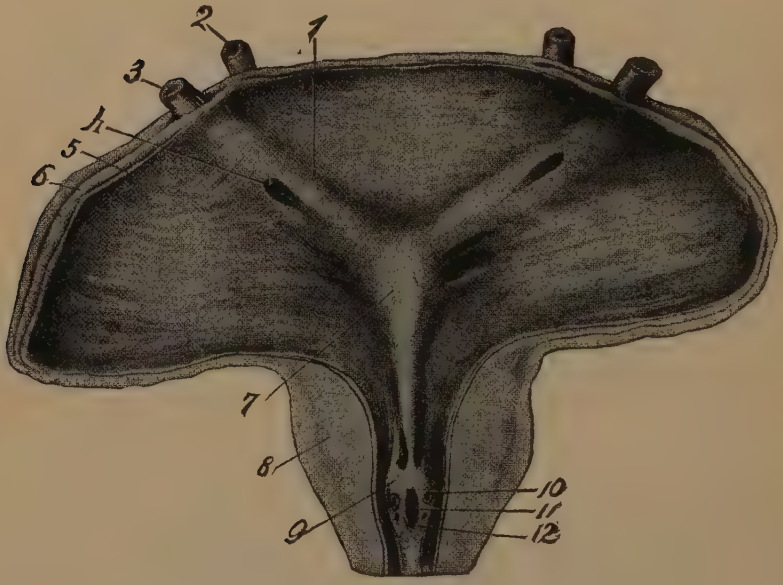

Fig. I.

Fig. I shows the relation of the prostate to the bladder and prostatic urethra. The floor of the latter is a very complicated and highly sensitive structure and bears an important relation to the gland, both from a functional

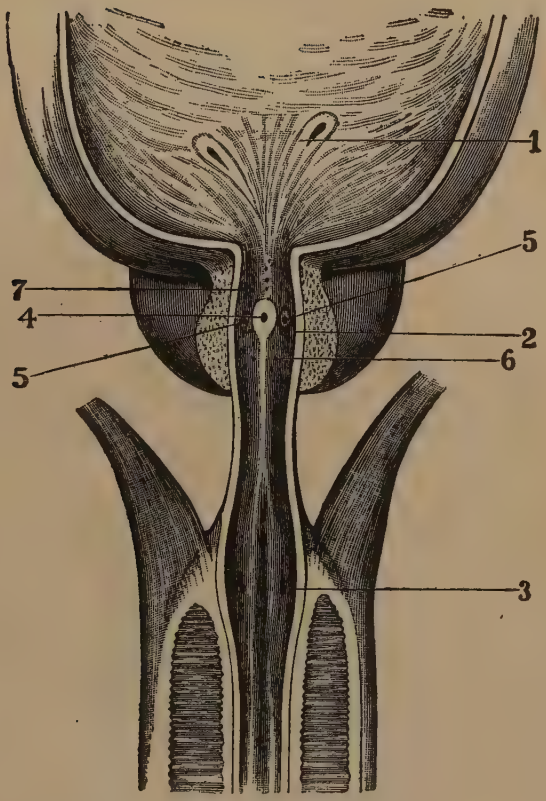

Fig. II. (R. W. Taylor.)

and pathological viewpoint. In fact, it is really a part of the prostate itself.

In the center and longitudinal direction of the floor is a small eminence (9), the verumontanum, or caput gallinaginis. Somewhat in front and in the middle of this eminence is a small cavity, the utricle (11). On each side there is a slight fossa, into which the ejaculatory (10) and prostatic (12) ducts open.

The floor of the prostatic urethra is the most sensitive part of the entire genito-urinary tract and is considered the seat of the sexual orgasm. It is subject to pathological lesion more than any other portion of the urethral canal, owing to its complex structure, and to the fact that it receives the irritative secretions of the prostate and seminal vesicles, when these latter organs are affected. It is, in fact, an index of no little importance to the condition of the prostate.

The orifices of the ejaculatory ducts or utricle often become dilated when disease of the prostate or vesicles exists, and are liable to engage the point of a small instrument, in an effort to force an entrance into the bladder, and becomes arrested, when a larger instrument will pass over these orifices and enter the bladder with ease.

Dr. R. W. Taylor, of New York, gives two excellent illustrations of these organs in his late work on genito-urinary diseases.

Fig. II gives a front view, showing the bladder and urethra opening upon the front surface: 1, the trigone and orifices of the ureters; 2, prostate and prostatic urethra; 3, bulb of the urethra with opening of Cowper's glands; 4, verumontanum with orifice of utricle; 5, openings of ejaculatory ducts; 6 and 7, openings of the prostatic ducts.

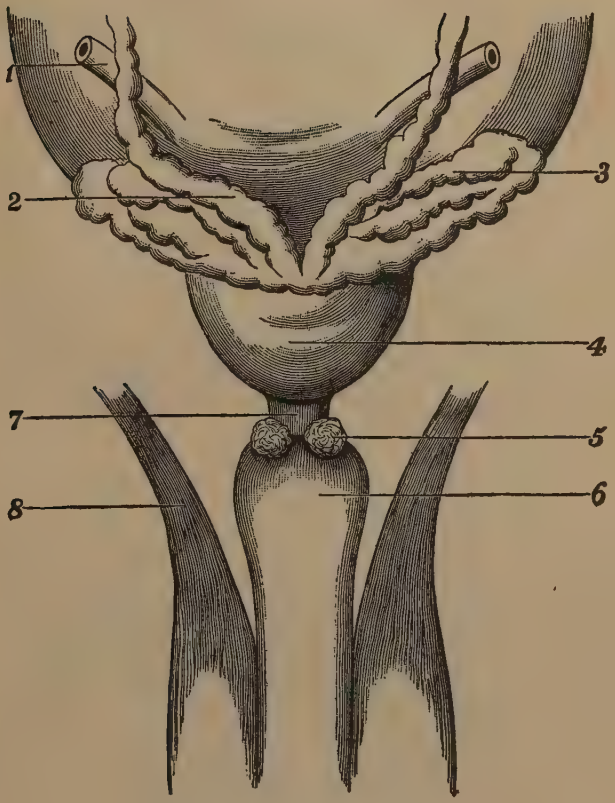

Fig. III. (R. W. Taylor.)

Fig. III gives rear view of the same organs: 1, ureters; 2, ampulla; 3, seminal vesicles; 4, prostate; 5, Cowper's glands; 6, bulb or urethra; 7, membranous urethra.

Beneath the fibrous capsule of the prostate is a firm band of unstriped muscular fibers surrounding the base of the organ and reflected downwards towards the apex. The same fibers radiate throughout the gland in the form of trabeculæ, forming meshes, through which the vessels and nerves ramify. Interposed between these meshes there are also numerous follicles that secrete a milky, alkaline fluid, which passes out through the prostatic ducts upon the floor of the urethra.

The arteries are derived from the internal pudic, vesicle and hemorrhoidal, which are branches of the internal iliac.

The veins form plexuses around the base and sides of the prostate, bladder and rectum, communicating freely with the hemorrhoidal, spermatic, dorsal vein of the penis and pampiniform plexus. Thus the organs from which they arise, namely, the rectum, spermatic cord, epididymis and penis, are brought into close physiological and pathological relations with the prostate. Passive congestion or stasis of the veins of the latter cause a clogging of the veins of the rectum resulting in ulceration or hemorrhoids; or, when the spermatic veins are involved, varicocele follows.

NERVES.

The nerves supplying the prostate are very numerous and sensitive. Those derived from the sympathetic system are supplied by the hypogastric and pelvic plexuses, as illustrated in Fig. IV.

A double chain of sympathetic fibers, as illustrated by Fig. IV, connect with the mesenteric, renal and solar plexuses, bringing the bowels, kidneys and stomach

Fig. IV. (Quain.)

specially into intimate relation with the prostate and other pelvic viscera.

A large number of spinal filaments, arising mostly from the sacral plexus, though some from the lumbar spinal nerves, are distributed to the prostate and adjacent organs, and communicate freely with the sympathetic. Fibers of the latter may be noted by reference to Fig. IV, as passing to the great sciatic (c r′) nerve, before it makes its exit through the sacro-sciatic foramen upon the hips.

Fig. V. (Hirschfeld and Leveillé.)

Fig. V shows the numerous branches of the spinal nerves distributed to the perineum and external genitals, which also communicate with the nerves of the prostate and pelvic viscera.

FUNCTION.

The prostate is an important genital organ, possessing the triple function: a, of expulsion of semen by means

of the rhythmical contraction of its muscular fibers; b, of being the nerve center of the orgasm; c, of secreting, through its glandular structure, a fluid essential as a vitalizing agent to the spermatic germs.

It is in this gland that the pleasurable sensation of the orgasm is located; the sensation being synchronous with the expulsion of semen. It is by this gland that the physiological impulse to gratify animal nature is indirectly exerted through the sympathetic and cerebro-spinal nerve centers. In fact, the gland has been appropriately called the seat of the sexual brain. The intimate reciprocal relations of the cerebro-spinal centers and the prostate are very marked, both in health and disease.

In health, excessive mental exertion, as by close study or business cares, will lessen the sexual appetite; while violent emotions, as grief, fright or anxiety, will temporarily suspend all desire.

Men are by nature much more sensually inclined than women; and when they cultivate libidinous impulses, and associate with prostitutes, are liable to indulge their sexual propensities to such an extent as to develop passions that may lead to grave moral vices, like excessive intercourse or masturbation, resulting in lesions of the prostate, or some form of nervous disease.

Just as mental disturbances influence sexual conditions, so in like manner do diseases of the prostate gland cause such various forms of mental disorders as inactivity, depression and numerous other neurotic aberrations.

I have especially noticed that men between the ages of forty and seventy, suffering from chronic prostatitis lose the keen mental activity they formerly possessed. Their perceptive and reasoning faculties become sluggish and inactive.

Owing to the contiguous relations, the direct source of

blood supply, and the intimate connection of the nerves of the prostate, bladder, seminal vesicles and rectum, disease of the prostate cannot exist any great length of time without causing either functional disturbance or organic disease of the others. Besides, inflammatory disease of the prostate often arises from chronic rectal troubles.

PROSTATIC DISEASES.

Diseases of the prostate gland will be considered under the following heads:

ACUTE PROSTATITIS.

SUBACUTE OR CHRONIC PROSTATITIS.

CONGESTED, ENLARGED PROSTATITIS.

SENILE HYPERTROPHY.

TUBERCULAR AND SYPHILITIC PROSTATITIS.

NEUROSES OF THE PROSTATE.

CHAPTER II.

ACUTE PROSTATITIS.

This form of disease of the gland usually results from harsh treatment of gonorrhea, by means of strong injections, large doses of copaiba, turpentine or cantharides, or from injudicious use of instruments. The gland swells very rapidly and is extremely painful. The inflammatory condition usually extends to the seminal vesicles, bladder and entire pelvic viscera, giving rise to marked pain in the region of the perineum, rectum and groins.

Dysuria is excessive and is often attended with incessant tenesmus. The attack is usually ushered in with a chill, which is followed by mild pyrexia. The desire to void urine is frequent and uncontrollable, the patient passing but a small quantity at a time. The irritation is often

transmitted to the rectum, giving rise to a sensation of fullness, and a desire to remain at stool. The latter symptom is especially prominent when vesiculitis coexists. Orchitis often supervenes which greatly increases the discomfort of the patient.

Treatment.—The treatment consists mainly in palliative measures, by way of rest in bed, anodynes in the form of hyoscyamus, opiates and hot hip baths. The diet should be light and consist mostly of demulcents, as of barley water, which is especially indicated; soups and other light nourishment. All injections or specific medication should be discontinued.

Urethral instrumentation is strictly interdicted, unless there are indications of retention of urine. Should it be necessary to evacuate the bladder by catheter, which is exceedingly rare, a full dose of morphia should be administered half an hour previously thereto. Rectal suppositories of boric acid, belladonna and opium give great relief. The bowels should be maintained in a laxed condition by means of saline cathartics.

In from five to fifteen days the urethral discharge is re-established, unless complicated with orchitis, and generally becomes quite profuse. This is followed by defervescence and the subsidence of all acute symptoms. At this stage I advise the free use of a five per cent solution of the aqueous extract of verbascum, to be injected deeply into the urethra, from four to five times daily, with an ordinary large sized gonorrheal syringe having a blunt point. I never advise a long nozzled syringe, as it often serves to perpetuate urethritis near the meatus. This treatment readily relieves all acute symptoms.

Should the discharge continue excessively and longer than a week, after the subsidence of acute symptoms, I

add one grain of sulpho-carbolate of zinc to the ounce of the injection before mentioned.

When complicated by orchitis, rest in bed is imperative. Local applications of belladonna and hamamelis with cold applications to the swollen testicle give relief. Anodynes internally should be the chief remedies.

All acute symptoms gradually subside under this treatment, leaving a chronic gleety discharge, which is a "flag" to indicate chronic inflammation of the prostate or vesicles, and will be considered in the succeeding chapter.

CHAPTER III.

SUBACUTE OR CHRONIC PROSTATITIS.

This affection of the gland is one of the most common diseases with which young men between the ages of twenty and thirty-five suffer. It is quite distinct from chronic congested enlargement, common to men of middle age, and from senile hypertrophy. A strict boundary line, however, cannot be drawn, with reference to age, in any class of diseases of the prostate. There are occasionally cases of chronic prostatitis that occur earlier than the twentieth year, while others are met with even past thirty-five without there being any perceptible enlargement of the gland.

Fig. VII illustrates this form of disease: the red parts indicating the sites of the lesions. In the earlier stages of the trouble the inflammatory condition is confined to the ducts and follicles of the gland, but when of long standing it becomes diffused and involves the entire organ. Ordinarily there is little or no swelling of the prostate; and the bladder, seminal vesicles and rectum are rarely involved, as is common in the other varieties of prostatic diseases. In some aggravated cases, however, the inflammation extends to the vesicles, ampulla, vas deferens, epididymis or the globus major and minor. When the latter are affected small worm-like lumps can be felt at each end of the testicle, which are usually tender to the touch.

Congestion of the pampiniform and hemorrhoidal plexuses of veins almost invariably result: the former causing varicocele, especially upon the left side, while the latter gives rise to a swollen condition of the rectal mucous

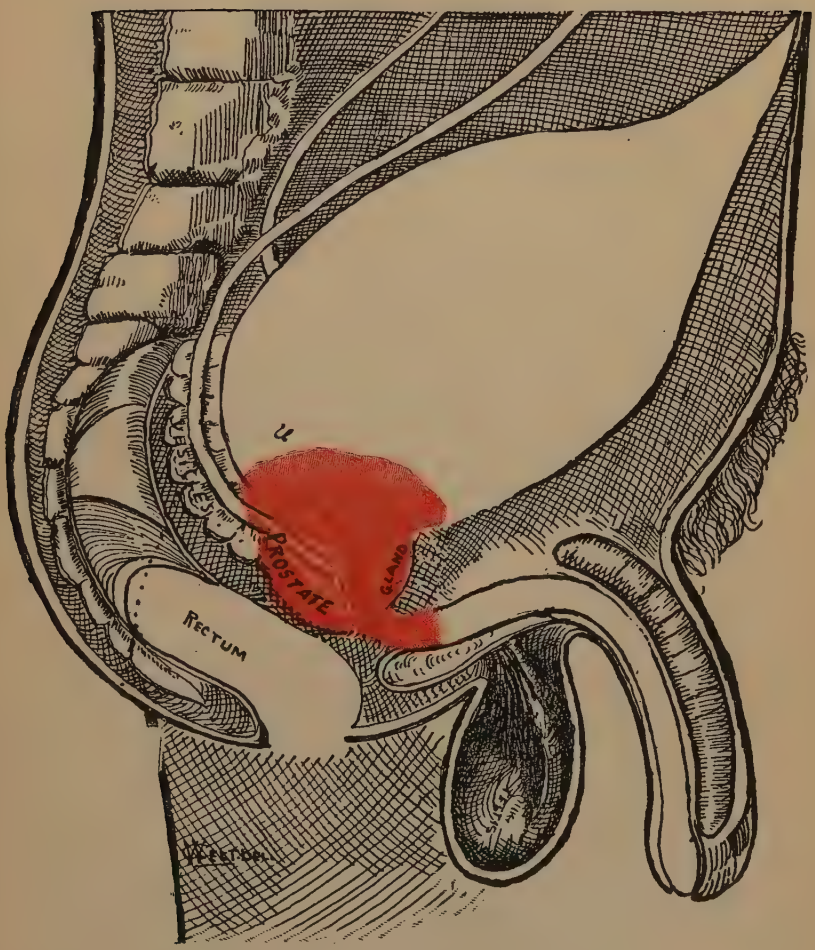

Fig. VI.

membrane resulting in protrusion, ulceration or the formation of pile tumors. These conditions are sequels to prostatic inflammation and not idiopathic diseases; and the cause producing them should be remedied before treating the symptoms, or all phases of the disease should be treated at the same time.

ETIOLOGY.

The most frequent cause of this form of disease of the gland is chronic gonorrhea, but it is not, as many physicians believe, the only one. On a liberal estimate, about seventy-five per cent of these cases are traceable to gonorrhea as the source of the trouble, while twenty-five per cent are due to other causes. Moreover, it is not a fact that the gland becomes affected only by mal-treatment of gonorrhea, as is usually the opinion of the patient, who is often encouraged in this view by rival physicians, as he "goes the rounds." It generally follows treatment even by the most skilled physicians, and, too, in cases where the patient exercises the greatest care.

Prior to the discovery of the specific germ, by Neisser, in 1879, for gonorrhea, which he christened "gonococcus," the medical profession were very much puzzled as to the cause, tenacity and complications of this disease. Such early authors as Selle (1781), Hunter (1786), Fournier (1806), Ricord (1836), Foucart (1846) and Brandes (1854) claimed that there was a direct relation between gonorrheal urethritis and rheumatism that occurred in conjunction therewith.

Guyon (1836) and Thiry (1856) advanced the theory that gonorrhea developed a latent rheumatic diathesis. Guerin (1846) and Laseque (1876) held that gonorrhea was a disease, *sui generis,* with a long period of incubation. Lewin (1878) advanced the theory that gonorrheal rheumatism was due to reflex irritation from urethritis.

Bernultz and Noeggerrath, long before the discovery of the specific coccus, held that chronic gonorrhea in men was accountable for many of the ailments in women, who never had a true gonorrhea and whose troubles could not be traced to any other source.

Like most great discoveries, that of Neisser was no exception to the general rule, and was met with strenuous opposition, until confirmed by the investigations of Bumm, Baumgarten, Finger, and many others in rapid succession.

I shall not discuss here the various means of scientific research leading to the final establishment of the fact, which is now recognized as a proven postulate, that the gonococcus is a facultative micrococcus (schizomycete), found free in the purulent discharge of gonorrhea and within the substance of the pus cells. The latter feature, together with the fact that it does not stain with iodine, are two of its most characteristic diagnostic points. Various diplococci are often present, so closely simulating gonococci that the different methods, as staining, culture growths, etc., have all to be used before a definite differential diagnosis can be established.

The gonococci, in common with most of the other micrococci, are anerobic and thrive only in a neutral or alkaline medium, and at a temperature of from 30° to 40° C. They feebly resist an acid medium, and in such have an ephemeral existence. Paradoxical as it may seem, from the tenacious manner with which this microbe clings to its victim, it is a delicate germ and readily succumbs to the effect of many germicidal agents, when brought in direct contact with them; but the gonococcus is so minute that it conceals itself within the pus cells, subepithelial cells, the lacunæ of Morgagni, Littres glands, the prostate and vesicles, and is out of reach of germicidal remedies as ordinarily used.

Up to the time of the discovery of the gonococcus the remedies in use were directed, mainly in an empirical manner, towards controlling the purulent discharge, it being unknown at that time that the pus cells carted away millions of the gonococci, which were the true source of the disease.

Keersmaecker and Verhoogen (followers of Oberlander) say, "the gonococcus is extremely sensitive to desiccation." * * * "It is hidden in the depths of the tissues and is protected against destructive agents."

The gonococci are first implanted, fostered and propagated at or near the meatus, in a medium and locality most favorable for their development. They multiply very rapidly, work their way along the urethra, and, in spite of all measures to prevent it, to the prostatic part; thence directly into the ejaculatory and prostatic ducts and follicles. The orifices of these ducts being open gateways, though their walls are in apposition, offer no resistance to the passage of the germs into the channels of the prostate and ejaculatory ducts, where they become hidden within the follicles of the gland, and are thereby protected from destructive agents as applied through the urethra by the usual methods. The course is also an open one to the seminal vesicles and vas deferens, to which they occasionally gain access.

The cylindrical epithelium of the urethral mucous membrane is the normal abode of the gonococci. Here they remain active and aggressive, but after leaving this their indigenous soil for that of the prostatic and ejaculatory ducts, they become lethargic and do not wander very far upon alien ground. Hence they usually do not pass further than the interior of the prostate.

The authoritative estimate of the proportion of all gonorrheal cases where the germs invade the prostatic ducts

and follicles, is placed at from seventy-five to eighty-five per cent; those that invade the vesicles, at from twenty to thirty per cent; and the vas deferens from ten to fifteen per cent. This is about the proportion as demonstrated by the author's clinical experience, though the late fad of stripping the vesicles would place gonorrheal invasion of the vesicles at a much higher ratio.

Since it is a positive fact, as proven by various pathologists in their examinations of prostatic expressions, that the prostate is the chief abode of the latent gonococci; authorities differ upon the subject as to whether the germs themselves subsequently penetrate cellular tissue and the walls of blood and lymph vessels; or that they remain dormant within the prostate secreting toxins, which latter are absorbed by these vessels and carried to remote parts of the body effecting metastasis, as manifested by rheumatism, arthritis or neuralgic pains in various parts of the body. Lindeman, Young and others claim that the affected nerves and joints are the result of the gonococci carried to these parts by the blood currents from a lesion localized in the genito-urinary tract. Bumm, Baumgarten, Neisser, Bochart, Gerbardt and Hartley maintain that metastatic diseases of the joints and nerves are the result of mixed gonorrheal infection. Guyon, Janet, Furbringér hold that these diseases follow as a direct result of ptomaine poisoning from the invasion of the gonococci in the tissues. There are others who advocate similar views all tending to the same result.

The author concludes, after summing up the opinions as expressed by the numerous investigators along this line, and recounting his own investigations and clinical experience, that metastasis is the result, in the majority of instances, of the toxins of latent gonococci that originate within the prostate as result of the secretion of the germs;

and it is only in those cases where an abrasion of tissue in the genito-urinary tract ensues that the cocci themselves enter the circulation and are carried by the blood currents to remote parts of the body. When the latter occurs and the cocci are deposited within the joints, nerves, etc., they readily die, as it is a proven postulate that they cannot live outside of mucous surface; and the disintegration of their cadavers intensifies local metastasis.

Taking either view, however, the question of vital importance is practically the same; which is, that the germs are concealed within the prostate, vesicles, or urethra, and if the gonococci can be destroyed in these organs, it stops the generation of toxins or destroys the germs themselves, as the case may be, and subverts their entering the system.

Clinical experience has convinced me that both of these views are correct. However, the metastatic diseases are much more often the result of the toxins eliminated in the prostate, than due to the presence of the gonococci themselves in the tissues. The latter condition rarely, if ever, exists unless there is some *marked abrasion* in the mucous lining of the urethra, prostate, or vesicles.

Many observers have reported the discovery of diplococci resembling closely gonococci, and, too, that would decolorize by Gram's Method, and where cultures would produce a urethritis of three or four days' duration but not a true gonorrhea. The writer has noted many similar cases, from clinical observation, and has been thoroughly convinced that these germs are non-virulent gonococci, rendered sterile by their having remained dormant for so many years within the prostate or vesicles.

During an acute exacerbation of prostatitis, causing excessive discharge within the urethra, these latent cocci are swept along with the discharge and at times set up a ure-

thritis of short duration, but they lack sufficient vitality to create a true gonorrhea. But, should the cocci enter the blood current, phagocytosis would be the most probable result; or, coupled with the lethal effect of blood serum upon the germs, they could scarcely escape destruction. Moreover, it is an indisputable fact that gonococci cannot live except within a mucous membrane, and, should it be possible for them to escape the destructive agents before mentioned, in their transit along the blood currents, it would seem impossible that they could live sufficiently long, outside of a mucous surface, to effect metastatic pathogenesis, except by poisons resulting from their death and decay.

I dwell upon this point at some length because the question is an important one and one that is presented almost daily in active practice, in regard to obscure chronic diseases.

Should these germs be carried to various parts of the body, and, if it were possible for them to live indefinitely as they do within the mucosa of the prostate, but few who have had gonorrhea could withstand their ravages. Besides, it would be impossible to reach them, if scattered over the entire body, with destructive agents that would not prove fatal to the patient.

The columnar epithelium of the mucosa within the prostate being in closer anatomical relation to that of the urethra, serves to perpetuate the lives of these germs better and longer than other mucous surfaces, though they do not propagate therein. The mild alkaline reaction of the prostatic secretion also ministers to the maintenance of their lives.

Clinical results following the treatment of the prostate, together with frequent examinations of the prostatic expressions, have convinced me that the prostate is the chief abode of the latent gonococci. I have traced, in numerous

instances, the origin of remote arthritic and neuralgic pains indirectly to the prostate, by destroying the hidden germs within the gland, which were evidently the *fons et origo malorum,* and which was evidenced by the immediate disappearance of all symptoms. The destruction of the gonococci within the prostate having suppressed the generation of the toxins, and the poisons being no longer carried through the lymph and blood channels to the tissues, all pain would disappear and recovery would be rapid. On the contrary, were it probable that the gonococci had lodged and remained alive, within the joints and other tissues, instead of their toxins, local treatment of the prostate would not relieve the condition, and it would be impossible to do so where polyarthritis existed.

Serous and synovial membranes and nerves are especially marked for the morbific effects of the toxins of gonococci. The pathological changes that occur as denouement of the toxins, in the joints and serous cavities produce conditions favorable for the development of diplococci or streptococci, that closely simulate gonococci; which have given credence to the extensive migration of the latter.

Owing to the tenacious sequels of gonorrheal infection, and the metastasis resulting therefrom, it is the opinion of many physicians that, when one once has gonorrhea, it is never entirely eradicated; and that it is attended with greater fatality than syphilis. The latter view is generally conceded, taking the sequels of gonorrhea into consideration.

Prostatic expressions have shown gonococci to be present in the fluid, thus forced out, for many years after complete subsidence of all gonorrheal symptoms. Some writers have discovered latent gonococci in the gland as long as sixteen years after having had an attack.

The past decade has been prolific of much research as to the habits, life and pathogenesis of these germs, which has been the means of revealing obscure diagnosis in many instances; and especially since the discovery of their hiding place in the prostate.

Furthermore, these germs may remain dormant secreting toxins that penetrate and maintain an inflamed prostate, but not effect metastasis for a long period, yet cause reflex neurotic disturbances.

When the gonococci have entered the prostate, they begin the secretion of toxins, which at first cause subacute, then chronic inflammation of the follicles and ducts, and subsequently parenchymatous affection of the entire gland; the result of which maintains a constant mucopurulent discharge that is poured out upon the floor of the prostatic urethra. This secretion must necessarily pass along the canal toward the meatus. The discharge may be so slight as to appear only as the *"morning drop,"* or it may become desiccated by the warmth of the urethra, and noted only by gluing together of the lips of the meatus in the morning; or it may even escape observation altogether. Then again, the discharge may become quite profuse at times as influenced by excitation, as by dissipation or other causes, and continue, regardless of all injections, sounds or other caustic applications to the deep urethra, or constitutional medication; as such treatments do not penetrate the ducts to reach the seat of the trouble.

The gonococci may remain hidden within these deep tissues for years in a latent state, unless, by certain irritative conditions, as induced by *"bacho et venere,"* when a copious prostatic discharge is excited, and the germs are carried by the excessive secretion into the urethra, where they may become auto-inoculable, and set up a fresh although mild attack of gonorrhea, or a plain urethritis.

It has also been demonstrated by Oberlander, Verhoogen, Finger and others that these germs may remain dormant for three or six years, or even longer, when, under certain conditions, they may become aroused to activity and manifest their pathogenesis; though not in as virulent form as the prime attack. Numerous instances have come under the author's observation where, even among married men, unmistakable evidence of latent gonococci had been aroused to activity, developing an acute urethritis which could not be traced to another origin than that of auto-inoculation.

OTHER CAUSES.

During erotic excitement, whether normally or abnormally, the prostate becomes hyperemic, either synchronously with or independent of penile erection. If this excitement is unduly prolonged, by toying with women, indulging continuously in libidinous thoughts, association with prostitutes, masturbation, continence or excessive intercourse, it causes venous stasis or congestion of the gland, resulting ultimately in subacute or chronic prostatitis; which readily extends and involves the prostatic urethra and adjacent parts. This condition provokes a prostatic discharge similar to that of gleet and is often mistaken for such. This discharge being poured out within the urethra, induces prostatic urethritis in the same way as that of the toxins of gonorrhea, and which may extend the entire length of the urethral canal, rendering it tender and supersensitive. Many times have I known such conditions treated many years for gonorrhea, when there were no indications of the latter.

It is somewhat difficult to define just what constitutes excessive sexual indulgences, as individuals vary so much in their physical organism and sexual propensities.

That which would be excessive and injurious to one man, might not be to another.

Masturbation.—In addition to its local baneful effect upon the urethra and gland masturbation is attended with an excessive drain upon the nervous system, and is, consequently, more apt to provoke some form of mental disturbance, owing to the absence of the natural psychical stimulus of the opposite sex, than by the normal act.

The evil effect of masturbation upon the prostate and vesicles primarily, and the nervous system secondarily, has been over-estimated by many, and treated with too much indifference by others. The fact of the almost universal practice, at some time of life, among males, renders it a convenient source to which to attribute all the sexual and nervous diseases, not traceable to that of gonorrheal origin.

Charlatans reap a rich harvest among youths and, too, older men, who, being over-sensitive, are too prudish or secretive to consult their family physician and fall an easy victim to their tenets and ruse. The family physician, too, is often accountable for this, by not making a thorough examination of the case when consulted, treating the matter with too much indifference, dismissing him with a tonic, or telling him it is "all in his head." The fact is that most of those addicted to the habit are so ashamed of it, that they will deceive the physician, in the large majority of instances, by denying the practice altogether, or minimize the extent of indulgence so as to mislead him.

Objective symptoms alone, as revealed by an examination, can determine the extent of the lesion as induced by the vice. I place but little credence in what one says about the frequency or length of time he *had* indulged (as they all say they have quit now).

Phimosis or an elongated prepuce often serves as an

exciting cause, both towards precipitating and perpetuating the habit. The late Dr. S. W. Gross attributed the beginning and continuance of masturbation as due largely to the redundant foreskin.

The deleterious effects resulting from masturbation are not due to the loss of semen, but to the nervous shocks and the local irritation to the sensitive urethra, prostate and vesicles, causing a congestion of these latter two organs; and a subsequent disturbance of the cerebro-spinal nervous system. While excessive sexual indulgence is depressing to the nervous and physical organism, and causes congestion and inflammation of the sexual organs, yet it is devoid of the nervous shock that attends the unnatural manner, as well as the local irritation resulting therefrom. The latter provokes more frequent repetitions of the act.

Opportunity, too, also favors frequent indulgence, and the sexual organ that suffers most is unquestionably the prostate gland.

Cold weather or wet feet aggravate all conditions of the prostate and bladder, and it is often the case that one affected with chronic prostatitis is comparatively comfortable through the summer, but begins to suffer on the approach of cold weather. Then again one may have been conscious of the existence of some form of bladder trouble for years, but of not sufficient gravity to consult a physician, until having gotten his feet wet, or exposed to severe cold weather, when an acute attack is precipitated.

All forms of prostatic diseases are subject to acute exacerbations and violent instrumentation; strong injections within the deep urethra, large doses of turpentine or cantharides often provoke an inflamed condition of the gland.

Horseback and bicycle riding are etiological factors of no small importance, and especially when the gland is already tender or when there are other excitant causes. The

pressure of the saddle upon the perineum, and the jolting of a misstep of the horse, or by a rough road for the bicycle, is exerted upon the deep urethra or prostate. Many men, suffering from prostatitis, have told me that they had observed the ill effects of a ride upon their wheels.

CONTINENCE.—A knotty problem, that often arises in the treatment of diseases of the prostate, relates to the effect, that totally refraining from sexual congress, has upon the gland of robust persons not in position to naturally indulge their sexual propensities. As before stated it is a fact, recognized by all leading genito-urinary specialists, that the prostate in all healthy men normally becomes hyperemic during erotic excitement; and it is in accordance with natural laws, that such excitement occurs at certain intervals, regardless of whatever moral or persuasive influence may be exerted to the contrary. While this state may be greatly mollified by one's habits, and by surrounding influences to divert the mind in channels of chaste morality; yet the intrinsic excitation, as exerted by the sexual organs, in performing their normal functions, is transmitted to the sexual brain or nerve center, which, in turn, excites hyperemia, especially in the prostate gland and penis. This local congestion or nervous excitation can be controlled for a time without injury either to the gland or nervous system; but by continual recurrences of sexual erethism, engendering the accumulation of semen, overdistending the vesicles to the extent of causing discomfort, and producing continuous prolonged prostatic hyperemia, finally results in congestion, irritation and inflammation; and, by reason of the highly sensitive nervous organization of the gland, and the reciprocal relation it bears to the sympathetic and cerebro-spinal nerve centers, various nervous disturbances of the latter are produced.

I have had under my observation several cases of chronic

priapism and different forms of neurotic aberrations, evidently due to continence as the prime cause, and resulting eventually in chronic prostatitis, and all the attending sequels incident to the disturbance of the sexual organs, and nervous disorders.

There are others where the surrounding influences, united with lascivious readings, libidinous thoughts and the intrinsic excitations of the normal functions of the organs, produce chronic sexual and nervous disturbances at a much earlier date and in a more aggravated form. For this reason I have usually much less trouble in treating married men than single.

Age, vocation and physical condition must also be taken into consideration. It is not difficult for a man past thirty, of delicate physique and whose business involves mental exertion totally at variance with any lascivious impressions, to abstain from sexual relations for an indefinite period without injury resulting from violating natural laws. But in the case of a young man of robust health, whose occupation requires but little mental exertion, and whose surroundings and associates tend to excite lust, continence would cause much prostatic irritation, congestion and inflammation.

Alcoholic stimulants of all kinds tend to produce erethism and congestion of the gland and should be avoided. Beer and wines have particularly a baneful influence.

SYMPTOMS.

In most cases the symptoms are common in many respects to those of stricture of large calibre, localized urethritis, vesiculitis, or chronic gonorrhea; or all these may coexist. In many instances these are apparently free from any disease of the sexual organs, and are manifested by mental depression, lack of confidence, melancholia, im-

potency, nervous dyspepsia, impaired memory or insomnia.

The eyes are usually dull, and often become so disturbed as to necessitate consulting an oculist.

Dysuria is rare unless complicated with stricture, granular urethritis or vesiculitis. In fact the urine being normally an aseptic fluid resists the development of pathogenic bacteria, although as many as thirty varieties of non-pathogenic bacteria are often present therein.

GLEET.

A slight continuous discharge is a prominent symptom of prostatitis. It unquestionably signifies the presence of a pathological lesion in some part of the genito-urinary tract.

The origin and source of this discharge has been the subject of much comment and investigation, as well as diversity of opinion among genito-urinary specialists. The fact that such a discharge does arise from some ulcerated, granular or inflamed surface is indisputable; and the urethra, being the most favorable site for such, has suffered the burden of caustic applications and operative procedure.

The writings of Dr. Otis, some years ago, attributing this discharge to infiltration, coarctation or stricture of large calibre, was followed by rash and indiscriminate cutting of the urethra for almost every conceivable trouble of the genito-urinary organs. Dr. Fuller states in his book on "Disorders of the Male Sexual Organs," that "as a result of Dr. Otis' writings on strictures of large calibre, he had seen cases that had been cut for pus in the urine, which were of pelvic origin. He also reports a case having come under his care that had been cut seventeen times for stricture, when the cause of the suffering was vesiculitis.

The author has seen quite a number of cases that had been operated upon two or three times for stricture, where

there were no indications of such, but whose symptoms were due to prostatitis or vesiculitis, causing a constant gleety discharge.

While the author thinks the criticisms of Dr. Otis' teachings are, at least, in part justifiable, yet any one having read Dr. Fuller's book, before mentioned, would infer that urethral discharges, as well as sexual disorders, were traceable almost exclusively to vesiculitis. While the title of his book is "Disorders of the Male Sexual Organs," yet I shall state that, with a conservative estimate, at least five-sixths of its contents is devoted to vesiculitis and a stripping of the vesicles. To state that the latter has become one of the fads of today is placing it mildly; and I shall venture the assertion that it will soon drop into as utter disfavor as that of the Dr. White's castration enthusiasm as advocated a few years ago.

There are others who are ready to accredit most of these symptoms to chronic urethritis. The book of Keersmaecker and Verhoogen, on chronic urethritis, is an excellent treatise upon the subject, and especially from a diagnostic point of view, evidencing extensive research, yet it appears that too much stress is placed upon local lesions of the urethra alone.

Gleet is not a disease *per se,* but a symptom of an existing lesion, and while it is generally understood to be a sequel of gonorrhea, yet scant discharges from the urethra occur from other causes so closely simulating it, that it is difficult to draw a marked line of distinction.

The writer considers that when a persistent urethral discharge, mild in character, resists all urethral treatment it is symptomatic of prostatitis in some form. Vesiculitis may coexist, and the vesicles should be examined, but, as the large majority of cases of vesiculitis originate from the urethra, or prostate, whether due to gonorrhea, masturba-

tion or other causes, the infection or extension of the inflammation must necessarily pass through the prostate before reaching the vesicles, and hence must involve the former. It is therefore irrefutable that the prostate, being in closer proximity to the urethra, and owing to its exposed position to the bladder, is much more liable to become involved than the vesicles; yet the trouble, if of aggravated form, often extends and affects the latter.

The urethra is still more exposed than even the prostate, and never escapes disturbance when disease of the latter has existed any great length of time; as the irritative discharge from the prostate or vesicles passing out into the urethra—their only source of exit—would eventually provoke urethritis; and upon examination, one finding a sensitive or inflamed canal, infers that the trouble was confined to the latter instead of the prostate. In fact, urethritis is often the most prominent subjective or objective symptom. It is evident, therefore, that by treating and relieving the urethra for the time only, the symptoms would recur, and continue to do so until the prostatitis or vesiculitis was cured. The patient continues to return and report the same "morning drop," or forked stream, as indicating the gluing together of the lips of the meatus, as result of the drying of the discharge before escaping. This continues until the patience of both the patient and doctor becomes exhausted, and, to the great relief of the latter, the former goes to another physician, through the advice of a friend, with the same result—all dosing the urethra and stomach, as it is evident, that, by simply treating the urethra, the trouble could never be relieved. Again, should the disturbance have originated in the urethra and extended to the prostate or vesicles, the same or similar symptoms would appear; which would necessitate the treatment of all three organs as before. Urethritis would

be aggravated and perpetuated by the prostatic discharge.

This chronic discharge has been the *bete noire* of the profession from time immemorial, since they have mostly confined their treatment to the urethra, or even should they realize its source, their means of reaching it have been inadequate.

The urethra has withstood sounds, injections, cauteries and lavages for more than a century, and in many instances with some relief, but never cured.

The objective symptoms reveal a red and often contracted meatus; as before stated the lips of which are frequently glued together, by the dessiccated gleety discharge. Upon passing a bougie a boule the first tender point encountered is usually about six inches down the urethra, at the juncture of the pendulous with the membranous portion. Here there often exists an erosion, granular surface or probably a stricture. Should one of the former exist, without a stricture, the instrument may be arrested thereat, by the contraction of the muscular fibers, or external sphincter, due to local irritation, as induced by the contact of the instrument with the sensitive point. The membranous part of the canal is quite tender, and the most favorable site for stricture, excepting that part near the meatus. On reaching the prostatic portion of the urethra the instrument detects the most sensitive part of the canal, which imparts the feeling of roughness, indicating a granular surface over which the instrument passes. Just as we regard the tongue as an index to the condition of the stomach, so in like manner do I consider the prostatic urethra symptomatic of the state of the prostate or vesicles. The instrument, if small, may enter the utricle and become arrested, or should the prostatic urethra be excessively sensitive the bougie may not pass on account of spasm; either of these condi-

tions may be mistaken for stricture, but it must be remembered that an organic stricture never occurs in the prostatic portion of the canal.

At times, when the urine is acrid, there is some difficulty in thoroughly evacuating the bladder. The irritative effect of the urine upon the tender part of the canal causes a contraction of the circular muscular fibers of the urethra at that point, which subsequently relax and allow the passage of a few drops or a drachm of urine thereafter. Some have slight pain just as the urine starts, others at the close of urination, which is often attended with the sensation of still more to pass.

The urethra, being the chief channel through which to reach the prostate for direct treatment, and often too, its local lesion provoking and maintaining prostataic affections in many instances, must necessarily receive especial attention in the consideration of any form of the prostatic disease. The secretions of the prostate or vesicles, passing over the urethral mucosa, produce certain pathological changes. These changes are not uniform throughout the canal, but are generally confined to localized patches, where the epithelial coating loses its smooth, moist surface and becomes rough and hyperemic or granular. The most favorable site for these patches is the prostatic urethra (which never escapes involvement), the bulbo-membranous junction and fossa navicularis. In some cases the entire urethral canal is more or less affected.

By means of a flexible bougie a boule, passed slowly along the urethra, the most inexperienced physician can readily detect the rough, tender patches. Every general practitioner should therefore supply himself with three sizes of these bulbous bougies—Nos. 12, 14 and 16, Am.

The most accurate way of detecting the real character of localized lesions within the urethra and bladder, as well

as the condition of the prostate and its ducts, is by means of a good urethroscope and cystoscope.

Much credit is due Oberlander of Dresden in achieving modern urethroscopy and cystoscopy. By his untiring efforts he succeeded in constructing an instrument through which a direct light could be transmitted to a localized area within the urethra or bladder. But the platinum wire used by him would become quite hot and it required a cooling apparatus that rendered the instrument large and cumbersome; besides encroaching upon the calibre of the instrument, limiting thereby the field of vision. So it fell to the lot of an American (Dr. Henry Koch of Rochester) to develop the mignon lamp, which consumes an energy of only four or five volts and 0.2 of an ampere. This lamp is practically devoid of heat, and can be inserted within the urethra or bladder for an indefinite time without the least inconvenience to the patient.

Various improvements have been made within the last few years until now localized sores can be easily detected within the urethra, bladder or around the prostate, and medicinal applications applied directly thereto. Besides, there is no guessing at the morbid condition or its location.

The size of the instrument I prefer is 26 F., and, if the calibre of the urethra is too small to admit of its entrance, it is pathologically narrowed at some portion of the canal and should be relieved before attempting an examination.

The instrument should be carefully examined, rendered aseptic, and the light tested before it is introduced. In some few cases the urethra is so callous to instrumentation that it is unnecessary to use an anesthetic, but where it is unduly sensitive I always use cocaine locally, as it is unpardonable to subject one to pain when it can be so

easily and harmlessly avoided. For this purpose I use from three to twenty per cent strength of cocaine, dependent upon the degree of sensitiveness of the urethra. In most cases the prostatic portion of the canal is the most sensitive, and the greater amount of the cocaine should be applied thereto. By means of instrument No. IX. the medicine can be applied to any portion of the urethra or neck of the bladder as desired, and, by exercising any degree of caution, with impunity. The cocaine is drawn into the instrument by means of the bulb at the upper extremity, similar to that of a medicine dropper, and is pressed out in the same manner. If the upper portion of the canal is not tender, or but slightly so, I do not press the bulb until the instrument reaches the prostatic portion, when slight pressure is made, but not sufficiently to force out the entire amount of the fluid. The bulb is then allowed to expand, when the surplus of the liquid is again taken up. After waiting a minute or so the bulb is again pressed as before. This is continued several times before the entire amount is ejected. Should the pendulous urethra be sensitive, it can be applied along its entire length in the same way as before described. I use a bulb on my instrument that only holds twenty or thirty minims, so that a twenty per cent strength of cocaine can be used with impunity and the parts thoroughly anesthetized, whereas, by an ordinary syringe, as is generally used, it would be dangerous.

It has become a fad among some physicians to catheterize the ureters, when more than one case of infection has been carried from the bladder into these tubes, thence to the kidneys. Besides, the cylinder of the plain cystoscope is larger and gives a better field of vision.

I also use a proctoscope or sigmoidoscope, which is constructed upon the same general principle as that of

Fig. VII.

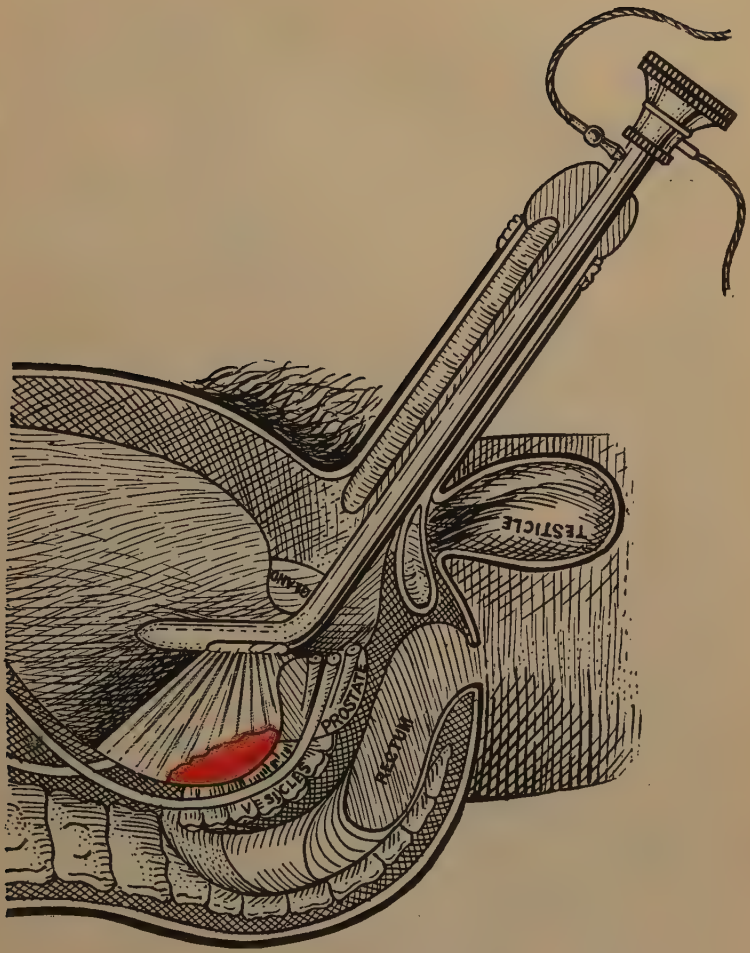

Fig. 8 illustrates the use of the cystoscope in viewing the interior of the bladder and locating a small tumor.

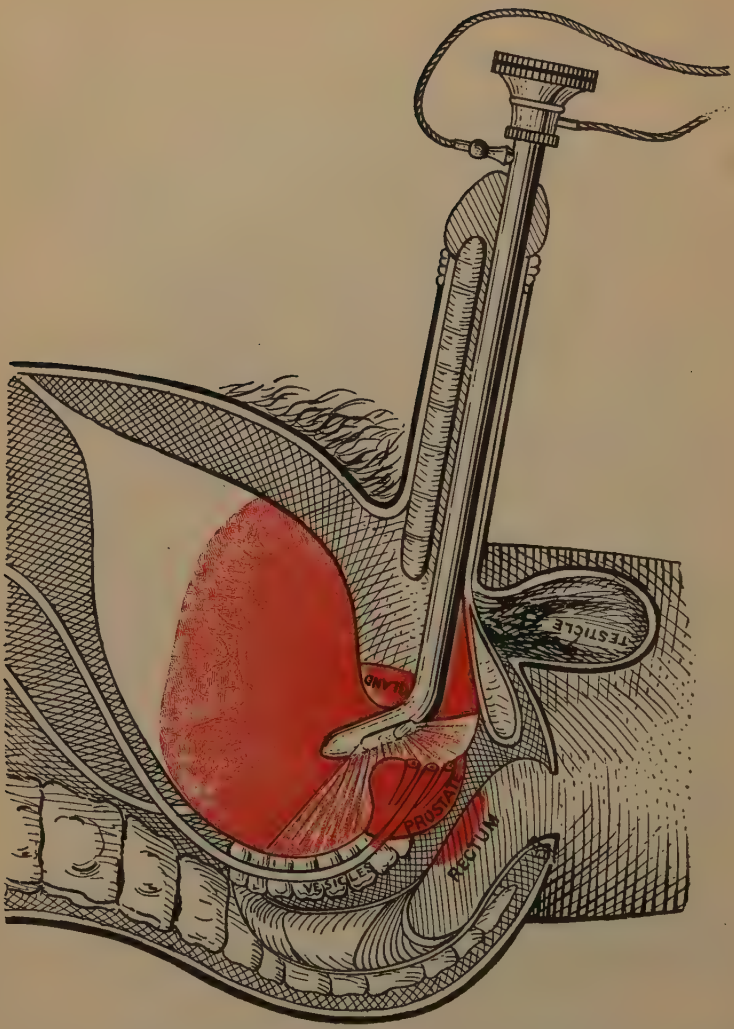

Fig. 9 gives a practical illustration of the cystoscope as used by the author to determine the exact state of the prostate and neck of the bladder, without guessing at their condition.

the cystoscope. This is a very useful instrument in detecting the condition of the prostate, vesicles and rectal mucosa. Before having procured this instrument I was in great measure groping in the dark with reference to the diagnosis as to the real condition of the vesicles, perivesiculitis and the rectal mucosa around the prostate.

I have found the best way to use the instrument is to pass it gently into the rectum and up to the sigmoid flexure; the obturator is then removed and the eye-piece, or metal plug, is inserted, together with the air bulb. Gentle pressure of the latter distends the rectum around the vesicles, and also prevents the fecal matter from dropping down within the tube. Mild distention of the rectum with air discloses the condition of the vesicles and surrounding tissues perfectly. The tube is slowly withdrawn and at the same time continuing the air pressure when the entire rectum and prostate can be accurately noted.

The pressure of the air should not be too great or it will cause over distention of the colon and result in colicky pains.

The voltage necessary for lighting these endoscopes can be obtained from cell batteries, provided they are supplied with suitable rheostats. The objection to cell batteries, however, is that the cells deteriorate with use, causing, when much used, irregular current or voltage.

I prefer the current from the direct incandescent circuit, with a properly constructed controller, when the voltage is uniform, whether used five minutes or all day long.

Fig. VII. illustrates a battery or controller that meets all indications for this purpose. In fact, it is the best apparatus upon the market, as it controls the current from a fraction of a volt to that of fifty or more. It is not only useful for lighting these delicate lamps, but can be used for all electrolytic work and cataphoresis, besides supply-

ing the primary and secondary faradic currents of any desired strength.

NOCTURNAL EMISSIONS.

Nocturnal emissions are not infrequent, and especially when granular prostatic urethritis coexists with inflammation of the gland. Such lesion of the urethra inhibits its normal elasticity, which, as a result, can not be accommodated to the elongated penis when erect, and produces an undue drawing upon that part of the tender canal that causes a fortuitous seminal discharge. One emission often irritates the prostate or vesicles and thereby causes a second or third in successive nights, and occasionally two in one night.

In other cases there is a condition of atony, and a relaxed state of the ejaculatory ducts and gland, when an emission may take place without creating sufficient sensation to arouse one from sleep. Again, these organs may be so sensitive, by reason of these lesions, that in an effort at sexual congress there is a premature ejection; even, at times, this may occur before intromission.

There is frequently a prostatic discharge, that is mistaken for that of a seminal character. These chronic discharges, from whatever source they may arise, rarely cause noticeable systemic disturbances, unless they are very excessive. It is the pathogenic change in the prostate or vesicles, that depresses the nervous system, disturbs digestion and prevents in many instances proper assimilation. Often there is little or no systemic disturbance, and one may remain in apparent robust health for a long time, yet he is conscious of something being wrong with his sexual organs. There are others whose general health is very much impaired as result of disorders of these organs, yet have few subjective symptoms pointing directly thereto.

DIAGNOSIS.

The diseases for which chronic prostatitis is most liable to be mistaken, are stricture and localized urethritis. The latter two may either succeed, coexist with or be excitant causes of the former.

The prostatic urethra is the most common site of urethritis and is pathognomonic of prostatitis. As organic stricture never occurs in the prostatic urethra, one familiar with passing of a bulbous bougie can easily determine when it has passed the membranous and entered the prostatic portion of the canal. This, too, can be determined by the length of the channel and the distance traversed by the bougie. Or, the operator may pass the bougie into the bladder, and, by withdrawing it, measure the distance and locate the points where it meets with resistance or roughness at the entrance of the prostatic urethra. There is also, at the point of roughness, a slight sensation of pain or irritation, which may not be felt at any other portion of the canal, or if at all, but faintly.

Owing to the granulated and slightly swollen condition of the prostatic urethra, it encroaches to some extent upon the calibre of the canal, causing some narrowness. This condition may be mistaken for stricture. Furthermore, the channel being sensitive at an inflamed point, and the contact of the instrument with the mucous membrane thereat may produce reflex contraction of the circular muscular fibers simulating stricture. This either causes a grasping of the instrument or obstructs its passage for the time. As previously stated, if an instrument of small size is used it may enter the orifices of the ejaculatory ducts or utricle, as they are frequently dilated in these diseases, and becoming arrested thereby, create the impression that stricture exists. I have known such mistakes made often and urethrotomy performed therefor.

The first morbific change that occurs within the prostate, is chronic catarrhal folliculitis. This condition may last for years, under strict observance of hygienic laws, and temperate habits with little or no manifest symptom than that of an occasional or persistent gleety discharge; or the discharge may be so faint as to become desiccated after reaching the urethra, and noted by shreds in the first voiding of urine. Subsequently the inflammatory conditions extend to the interior of the gland and provoke interstitial prostatitis, causing soft infiltration with slight tumefaction of this organ; yet, there may be little or no local or systemic disturbance, unless there occurs an abrasion of tissue within the prostate, when the toxins or cocci may become absorbed and engender metastasis.

It is quite common for some men, as influenced by these toxins, to become emaciated and delicate though suffering no pain or marked constitutional disturbance; while others remain in robust appearance, though suffering from metastasis, or pains anywhere from that of the back of their neck to their heels. Others become nervous from functional involvement of the cerebro-spinal centers, causing melancholia, impaired memory, sciatica, paraparesis or many other forms of nervous disturbances. These changes may develop so insidiously as to create no uneasiness upon the part of the victim, unless the vesicles become involved, or the inflammatory conditions encroach upon the ejaculatory ducts, narrowing their calibre or limiting their normal elasticity to the extent of obstructing the passage of semen altogether; or, should it pass through these narrow channels, during sexual congress, it would be followed by dull pain, or marked nervous depression.

Long standing disease of the gland develops a congested state and inflammatory complications of the bladder, rectum, vesicles, and, at times, the kidneys, but the latter are rarely affected to any serious extent.

TREATMENT.

Owing to the diversity of symptoms, both subjective and objective, and the complications that exist with individual cases, it is obvious that the treatment must necessarily vary in accordance with the existing pathologic conditions and indications. It is therefore impossible to establish a fixed rule, by which to be governed in the treatment of all cases. I can give here only a general outline of the course to be adopted; whereas a more detailed account will be given in the clinical reports that will follow hereafter.

As the urethra and rectum are the only channels through which to reach the prostate for direct treatment, these must be rendered and maintained in a condition as free from inflammation or irritation as possible. As the larger portion of the prostate lies between and in contact with these two canals, it would be impossible to relieve the gland as long as these remain inflamed.

Any acrid condition of the urine, whether too acid or alkaline, should be corrected. As before stated, in this class of diseases of the gland, the urine seldom requires special attention, since the bladder or kidneys are rarely affected.

When there are no acute symptoms I usually give fluid extract of Triticum repens to render the urine bland and non-irritating. When over-acid, potassic citrate may be added thereto with benefit. There rarely exists an unduly alkaline urine in these cases, but when such is present, and attended with vesical irritation, cystogen tablets—four to eight daily—has proven invaluable in controlling this state. In excessive dysuria, or where there is an acute inflammatory condition of the prostate, hyoscyamus is indicated until all acute symptoms are relieved. For annoying priapism, or marked erethism of the genitalia, bromide of sodium, administered in ten or fifteen grain doses at night,

gives temporary relief, until cure of the prostate is effected.

There are other constitutional remedies that are especially useful in individual cases towards relieving the annoying symptoms until the morbid condition of the prostate is relieved. So much has been said and written of late years, regarding the use of cystogen and urotropin in genito-urinary diseases, that these drugs are given in a routine way without reference to their specific action. While they have the property of correcting the excessive alkalinity of the urine in some cases, yet the liberation of formaldehyd in the urine is very irritating to the urinary passages, and, if they are prolonged any length of time, engender much vesical disturbance, dysuria and frequent micturition.

"Staphisagria, thuja or oil of wintergreen in doses of from one to ten minims each, three to four times daily, are about the best remedies that can be used in chronic catarrhal conditions of the mucosa of the bladder or urethra. These three may be combined with marked benefit. They should be given highly diluted."

Radical treatment of the gland should be delayed until all acute symptoms of the urethra are allayed; unless, as in some cases, there is urgent necessity for immediate relief, or certain conditions of the gland provoke a continuous urethritis.

In the large proportion of prostatic diseases urethritis coexists, which generally aggravates the trouble. To allay the sensitiveness of the urethra, I begin with the use of a ten per cent solution of the aqueous extract of verbascum, injected with an ordinary gonorrheal syringe, of large size. This is forced into the deep urethra or even bladder. Should a copious purulent discharge coexist, one grain of

sulpho-carbolate of zinc to the ounce is added thereto. I not only avoid instrumentation until all acute urethritis has subsided, but often defer my examination where subjective symptoms indicate such condition, until the acute symptoms have been allayed. The invariable result is reduction of the inflammation and relief of the tenderness, so that a bougie may be introduced without pain. After the injection has been used from two to three days and all acute sensation in the urethra has disappeared, I then insert a soft flexible bougie, previously annointed with an

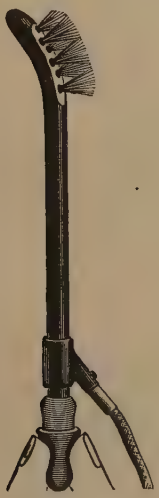

Fig. VIII.

Fig. IX.

oil composed of one part of oil of eucalyptol to eight of benzoinol. As the sensation in the urethra diminishes the proportion of eucalyptol can be increased until it stings sharply. This combination so applied makes a stimulating yet soothing application to the canal. The bougie retains sufficient of the remedy to apply thoroughly to the entire mucous surface. The application should not be used more

often than every second day, or in case of great tenderness, every third day. The injection can be continued at the same time until the acute symptoms have completely subsided. I generally use this treatment from one to two weeks, or in some rare instances longer before beginning the radical treatment. Before proceeding with the latter, I shall describe briefly my instruments, together with their modes of application.

Figures VIII and IX illustrate instruments devised by the author for the special treatment of prostatic diseases. The central part of the instrument is metallic, and insulated throughout its length, except at the curved extremity (as shown) and the point to which the cord is attached. A rubber bulb is fitted over the other hollow end. The exposed part of the metal at the end is perforated, so that when the instrument is immersed in any liquid medicine and the bulb is pressed, then relaxed, it partially fills; when the bulb is again pressed the medicine is forced out in jets through the small openings, as illustrated. No. IX is used to apply the remedies to the prostatic urethra and neck of the bladder; but as the greatest trouble exists upon the floor of the urethra and within the ejaculatory and prostatic ducts, instrument No. VIII is used, as shown by reference to Fig. X.

In the two conditions illustrated by plates VI. and XII. cataphoresis through the rectum and prostatic urethra, as shown by figures X. and XI., is especially indicated. In the latter the medicine is introduced through the curved, cup-shaped opening at the lower extremity, and, by means of a rubber-tipped syringe it is forced out through the openings at the other end, as indicated. The electric current and the medicine being limited to that part immediately opposite the prostate are transmitted to the gland by catapnoric action.

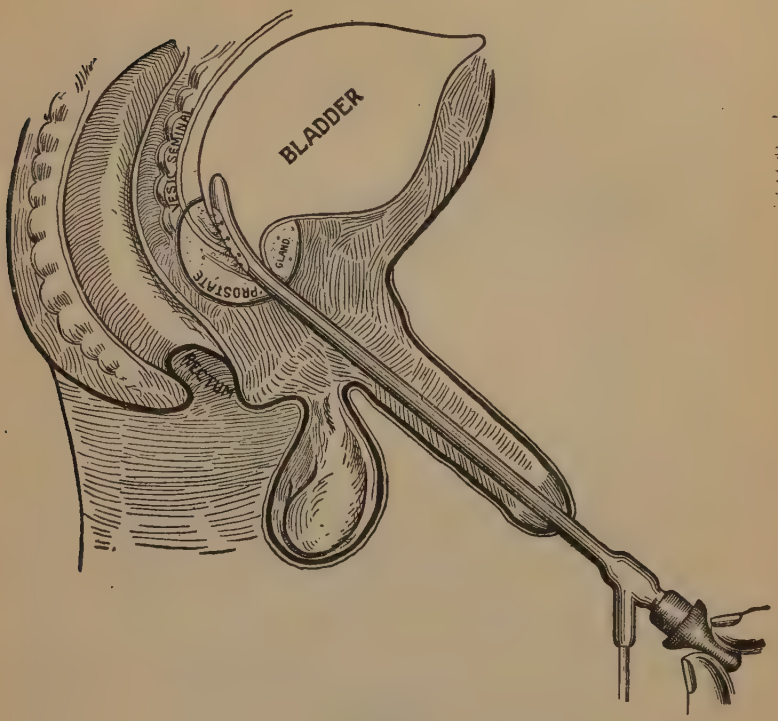

Fig. X.

By passing the electrode further up the rectum the same cataphoric action is exerted upon the vesicles when they are involved.

The instruments are so constructed as to meet all indications for applying medicine directly to localized ulcers, or granulated patches, along the urethral canal, and effect cataphoresis, interstitial electrolysis, vasomotor contraction, etc.

It must be remembered, however, that the properties of the currents and remedies as used are limited to their exposed metal ends and only within an area of a few inches

therefrom and dependent upon the strength of current. As the metal part (Fig. VIII) is in apposition to the floor of the prostatic urethra, the full influence of the current, for whatever purpose used, is concentrated upon that portion of the gland tunneled by the ejaculatory and prostatic ducts, and the parts that are always affected in this disease. The strength of the current, therefore, as well as the remedy, when used for cataphoresis, should be very mild.

For topical applications or cataphoresis the alcohol contained in tinctures or fluid extracts is too irritating, so I always use aqueous extracts, when using organic substances. For cataphoresis I prefer, in most instances, organic preparations to those of inorganic, as the latter are more rapidly decomposed, do not penetrate the tissues, as do the organic by electric-osmosis, and produce interstitial electrolysis or their germicidal effects upon the micro-organisms when such are suspected

For anodal cataphoresis a non-oxidizable electrode should always be used, or the electro negative elements will combine with it and form new compounds, which may be very irritating or wholly inert. An oxidizable electrode may be used in some instances with advantage to effect metallic cataphoresis, when the result of such combination and its properties are known. As, for instance, the anodal use of a copper electrode results in the formation of oxychloride of copper, which would be transfused throughout the gland and be of marked benefit in some cases. On the other hand, should a brass electrode be similarly used, a double combination would result and the formation of chloride of zinc would be very painful.

The treatment of cases of gonorrheal origin should be somewhat different from those due to other causes. In the former, germicidal remedies should be used, although

I have clinically demonstrated in many instances phagocytosis by the attraction of leucocytes, and, aided by the lethal effect of cataphoresis, all evidence of the germs disappear. The cathodal attraction of blood serum is of easy demonstration, both within and outside of the body.

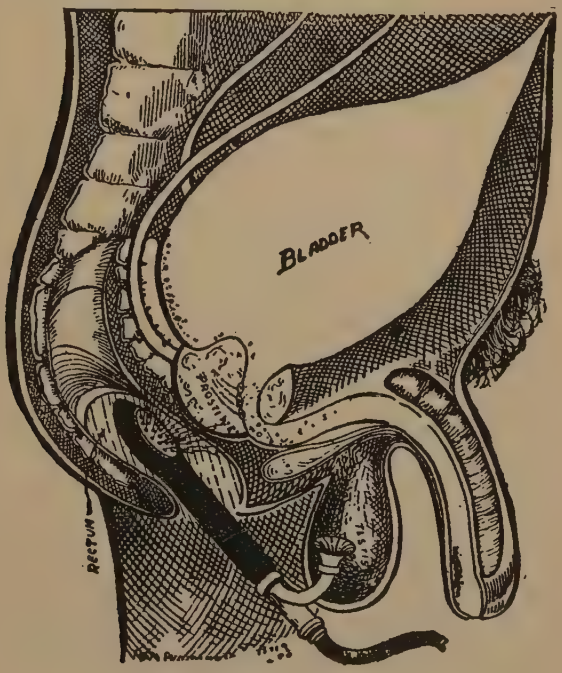

Fig. XI.

Let a non-oxidizable electrode be attached to the anode and passed into the urethra, and, even with a mild current, it will soon become glued to the parts; when, by reversing the poles the cathodal attraction of serum will loosen it very quickly. The experiment may be made by applying the poles in a similar way to a fresh beefsteak, when moist-

ure will rapidly accumulate on the cathodal side, while the opposite side will become desiccated.

The electrolytic, cataphoric and dynamic properties of the different currents are indisputable. These properties can be used to effect synthetic or dialytic changes in both organic and inorganic substances; exert, by attraction and repulsion, oscillation of molecules of bodies; and transfuse liquids through animal tissue. While these agents can be applied to destroy micro-organisms, dissipate morbific tissue and invigorate the atonic organs; yet they cannot be used without due reference to the condition of the parts, the selection of the proper current and remedy to be used therewith, intervals, strength and length of time to be effectual and not engender harm.

Before the parts can be restored to a healthy state, the morbid tissue or unhealthy granulations must be removed. The most satisfactory way by which this can be accomplished, without direct or ultimate bad results, is, in my opinion, by electrolysis or cataphoresis, accompanied with suitable medicinal remedies. Nitrate of silver has been in use for that purpose from time immemorial, but it causes excessive pain, fails to penetrate the ducts and gland, and is often followed by cystitis, prostatis or epididymitis. The patient is often confined to bed for weeks, and, on recovering, is visited anew by the same trouble; which persists in a chronic condition, as before. Moreover, the nerves, vessels, follicles and parenchyma of the gland lack vitality and recuperative power, and, even after the morbid products have been removed, require the invigorating influence of the current in order to bring about healthy granulations and a restoration of the organs to their normal state.

The most satisfactory method of treating these organs is to thoroughly examine them with the cystoscope, and locate the ulcerated patches within the urethra, see defi-

nitely the condition of the prostate and bladder. Then the treatment can be applied directly to the diseased parts. It is only after all the acute symptoms have been allayed by the methods heretofore detailed, that the electric treatment should be used.

As ultimate results depend largely upon the proper selection, control and application of the currents, as well as upon the suitable remedies to be used in connection therewith, I shall take it for granted that the reader, before proceeding further with the detailed electric treatment that follows, is thoroughly familiar with the subjects of electro-physics, electrolysis and cataphoresis as described in Chapter VIII.

Before beginning electric treatment, the operator should carefully examine the battery and conducting cords, to ascertain whether the former is in perfect working order, and the latter are intact and connected with the proper poles. The latter he should frequently test in order to be certain as to their proper applications. This may seem an excess of caution, but if the operator himself was being treated, and had experienced the result of forgetting to turn off one switch, or turn on another, or, still more important, to note carefully the position of the commutator, he would agree that these points can not be too forcibly impressed. Even now, after many years of experience in manipulating all kinds and makes of batteries and accessories, I never fail to use these precautions.

In using the galvanic current for electrolysis or cataphoresis, it is important never to shock the patient. Although probably no harm would result, yet the patient would always be in fear of a repetition of the shock, even if he did not discontinue treatment altogether. To avoid this, a large sponge or carbon electrode, about eight inches in diameter, is attached to the cord (which is previously

connected with the indifferent pole of the battery), and placed within easy reach of the patient—preferably upon the stomach—that both hands may be used if necessary. The active electrode is then placed in position for treatment, and the cord attached thereto. Up to this time the patient has not been allowed to touch the sponge, or indifferent electrode, with his hands. He is then instructed how to touch it gently with the fingers of one hand, and gradually bring them down until the palm is flat upon it. Should it be desirable to increase the efficiency of the active electrode, the other hand can be placed upon the sponge in the same way. The greater the surface of the indifferent electrode, the greater, in direct proportion, is the efficacy of the active electrode. Before removal of the latter, the hands should first be removed, in the same manner as they were applied. Should it be necessary to reverse the poles during the treatment, by means of the commutator, or in any way, have the hands removed first and then replaced in the same manner as before described. By observing these precautions there will be no shock.

A battery should be so constructed that the current can be gradually increased from the minimum to the desired strength without interrupting the circuit. The susceptibility of individual cases varies so greatly that I would always advise the use of the mildest current and the shortest duration during the first few treatments. Whenever there is an indication of pain, the treatment should be discontinued at once. I rarely use local anesthesia, even in the case of nervous patients with excessively hyperesthetic urethras. The sensation is one of the best guides to the strength of the current to be used, and the length of time it is to be continued.

We must bear in mind the objects to be accomplished by treatment, viz., the removal of morbid products and the

relief of passive congestion by stimulating vasomotor contraction, thereby reducing inflammation. These can be obtained without producing undue pain. Pain causes congestion and inflammation, and it is impossible to state just how many volts or milliamperes should be used in the beginning or at any time during the treatment. A current of sufficient strength to relieve one patient might be inert in a second case or even harmful to a third. I begin with from five to ten volts in the circuit, and never occupy more than three or four minutes during the first or even second treatment. Most beginners, and, in truth, nearly all, with whose work I am familiar, try to do too much, and in too short a time.

As to the selection of an instrument, I rarely use an electrode smaller than No. 14 A, which, unless there is a stricture, passes readily into the prostatic urethra, and thence into the bladder, without engaging the openings upon the floor of the prostatic urethra. I always begin the electric treatment by using the electrode, as illustrated by Fig. IX. With this I denude the prostatic urethra of the unhealthy granulations, by means of cathodal applications. These treatments are never made oftener than on alternate, or, more frequently, third days. In some highly sensitive cases I allow a week to elapse between treatments, and use a bougie with benzoinol ointment, in the interval. It generally takes from three to five treatments to remove all the granulations, which can be detected in the urine, if passed in a bottle, for two or three days after each treatment.

In making a cathodal treatment, the kind of metal used upon the point of the electrode is a matter of indifference, as the electro-positive elements do not affect it. But in anodal treatment the electro-negative elements, as oxygen, acids, etc., combine with most metals very readily. In these I always use an electrode of platinum or gold point;

unless I wish to procure a local effect by means of the metallic combination with the elements. For example, after denuding the prostatic urethra of the granulations, in order to bring about healthy action, I often make an anodal application with an electrode having a solid copper point, with very happy results. The action of the acids of the electrolytes upon the metal, together with the tonic effect of the anode, brings about renewed vigor of the tissues. Those new combinations also penetrate the gland by cataphoric action and have the same healthy effect upon it.

The selection of remedies to be used by cataphoresis within the ducts and upon the follicles and gland, must be made with reference to the electrolytic effect of the current. As water and salt enter largely into the composition of animal tissue, free oxy-chloride can always be expected in an anodal application.

So complex are the chemic constituents of many remedies, the electrolytic effect of the current upon them, and the recombinations resulting from the union of the electro-negative elements with reference to their relative affinity, that in many instances, it is difficult to determine exactly what the changes are and the combinations formed thereby.

The frequency with which urethral instrumentation should be used depends upon the condition of both the prostate and urethra. Should the inflammation and supersensitiveness of the canal have been greatly allayed by injections and bougies, as before described, then electrolysis or cataphoresis can be employed every fourth or sixth day, alternating with the use of the bougie the second or third day. The interval between the use of the bougie and that of the electrode should either be two or three days, depending upon the sensitiveness of the urethra and prostate. Should tenderness of the canal still continue, the injec-

tion should be used uninterruptedly. In some instances urethral instrumentation should be used only once a week.

The advice of Sir Henry Thompson in this connection is very valuable and should be rigidly observed. He says: "Remember that the introduction of an instrument is more or less of an evil never to be resorted to unless a greater evil be present which its employment may probably remedy."

It is always better to err upon the conservative side, and to do too little rather than too much. There is one other point of special importance that I wish to impress forcibly upon the minds of my readers—one that I learned by observation—and it is this: after a patient has been treated for some four to eight weeks in succession it is better, in the majority of cases, to discontinue all treatment for one, two or even three weeks. This is in order to give *"vis medicatrix naturae"* a chance, and to rid the gland of the disintegrated products which result from interstitial changes, as caused by electrolysis or cataphoresis. In the large majority of cases the improvement is more marked than if the treatment had been uninterrupted. This fact was noted in many instances where I was treating men who lived at a distance, and who had to return to their homes on account of business or for other reasons. On their return I would find great improvement; and in many instances complete recovery would result, which obviated the necessity of a return for further treatment.

Much depends upon the caution and skill of urethral instrumentation. I think it would be well for many physicians to adopt the suggestion of Sir Henry Fenwick (surgeon to the London Hospital), where he says to his assistants: "Every dresser should be induced to pass a full sized steel bougie upon himself once or twice. He would then appreciate the need of the utmost gentleness in ure-

thral instrumentation." I have seen much harm result from the injudicious use and rough handling of instruments in the treatment of the prostate gland.

The treatment I have detailed does not interfere with the patient's daily business. But, on the contrary, he begins to feel better and fitter for work in a few days after the treatment is begun.

I invariably interdict the use of alcoholic drinks, and especially beer or fermented wines, during treatment; as they have a tendency to increase local congestion and inflammation, and, besides, cause increased precipitation of uric acid. I do not otherwise restrict the diet, in the majority of cases.

Case I.—Chronic Prostatitis and Prostatic Urethritis.

Aged twenty-four; single; history, as given by himself, is as follows: When eighteen he had gonorrhea which lasted about nine months. During the first stages of the disease dysuria was excessive, the discharge from the urethra being very copious, and followed by vesical tenesmus, chordee, etc. He had several succeeding attacks, which lasted only a few weeks, during which time there was but little pain or disturbance of any character. A gleety discharge followed, continuing up to his twenty-first year, when he was pronounced strictured, and treated for such by means of steel sounds. The treatment was very painful and at first followed by bloody discharges. This was continued for about a year, during which time there was a continuous gleety discharge. His health was much impaired; there was a dull aching sensation in the region of the perineum, especially when walking or standing. He changed physicians; sounds were used as before, but larger, and producing hemorrhage attended with great

pain. His health continued to grow worse; he became very thin; suffered with anorexia, emissions and weakness of the sexual organs, dull headache, despondency and lack of confidence.

Upon examination I found the meatus red, inflamed, and the lips glued together. There was a granular ulcer in the fossa navicularis about an inch behind the glans penis. On the introduction of a *bougie a boule,* there was little sensitiveness of the urethra until the prostatic portion was reached, where roughness offered a slight resistance to the passage of the instrument, indicating a granular ulceration, and extreme tenderness. On withdrawal of the instrument pus and mucus were found adhering to it. Microscopical examination did not reveal any gonococci. Upon pressure through the rectum there was very slight tenderness of the gland and little or no swelling.

TREATMENT.

On the second day after the examination I made an application of ointment composed of the oil of eucalyptol one part to benzoinol eight. This was repeated on the third day thereafter, when there was some less tenderness. Two days afterwards the ointment was again applied and the tenderness became still less apparent. Three days thereafter treatment by electrolysis was instituted, by means of No. 14 electrode, with five m.a., lasting three minutes. There was at the time a slight stinging sensation, followed by a mild mucopurulent discharge. On the second day an injection was given, one grain of sulphocarbolate of zinc to one ounce of a ten per cent solution of verbascum, to be used four times daily. On the third day after the electric treatment the ointment was again used, the injection being continued in the interim. The discharge became less, and three days afterwards electroly-

sis was again applied with eight m.a., for three minutes; slight watery discharge followed the treatment. Small granules and shreds were noticeable in the urine. There followed an improvement in every respect; discharge scarcely perceptible. Cataphoresis was now applied through instrument No. VIII, with five per cent solution of verbascum, ten m.a., for five minutes; slight sensation, little irritation following. The case was treated thereafter by means of cataphoresis (a one per cent solution of thuja —Aqueous—being used), an ointment, alternating every third day for one month. Treatment was then discontinued for ten days, when patient returned feeling greatly relieved; no discharge, cataphoresis used with thuja, one per cent strength, ten m.a., three minutes, causing slight stinging; no ill effects following. Ten per cent solution of verbascum was applied in the same way to the fossa navicularis. The patient was then treated once a week by means of cataphoresis, with twenty per cent strength of verbascum for a month, when he was discharged—cured.

This case was under observation for several years after dismissal and there was never any symptom of the former trouble. In regard to the remedies used I may state that thuja is a non-alcoholic extract of arbor vitæ, which I have specially prepared for me. The alcohol contained in tinctures is too irritating, unless well diluted, when the resin in thuja is precipitated, and the medicine is rendered inert.

Case II.—Prostatitis, Stricture.

Gonorrhoeal history of seven years standing, with frequent recurrences; gleet constant. Patient had stricture in the membranous urethra, six and one-half inches from the meatus—caliber 12 A. Immediately back of the stricture and extending through the prostatic urethra was a

granulated ulcer. There was apparently no obstruction to the flow of urine nor pain during the time, but at the close of the act there would be slight pain and dribbling of urine, lasting from three to five minutes. At times a milky discharge preceded the flow. This preyed upon his mind, as he believed it was spermatorrhea, for which, as he said, "he had taken barrels of medicines." He was troubled with sexual and moral hyperesthesia, insomnia and hypochondriasis. The discharge proved to be a perverted prostatic secretion containing also mucus and pus cells. He was in good flesh, though pale and easily tired upon exertion. Sexual relations were very erratic. At times several weeks would pass without the least desire or even erection. Then again there would be an almost insatiable propensity, but in attempting the act ejection would occur before intromission, followed by a dull aching in the region of the perineum.

Applications of benzoinal ointment were made on alternate days three times. On the second day, after the last ointment treatment, electrolysis was applied to the stricture, a 14 A. electrode having been attached to the cathode. The strength of the current was gradually increased from five to twelve m.a., for five minutes, when the electrode passed the stricture. There was no pain until the stricture was passed, and the electrode came in contact with the granulated ulcer behind it, which was very sensitive and somewhat painful. The circuit was immediately broken and the electrode withdrawn. On the third day thereafter a bougie No. 12 A. was introduced, and passed easily into the bladder. Three days afterwards electrolysis was again applied in the same manner as before with five m.a., for three minutes. The electrode entered the bladder without resistance, and with very little sensation. This was followed as usual by a slight muco-purulent discharge. Cata-

phoresis was then instituted with one per cent strength of Ichthyol every fourth day for three weeks. Complete recovery resulted.

Case III.

Single; aged thirty-four; consulted me for "nervousness." He had been a very successful business man, having charge of a large force of men in an extensive establishment. He was naturally very reticent with men and timid with women.

He had never had any venereal disease, and in fact had no subjective symptoms of sufficient importance to justify an examination of the genital organs. Thinking that close attention to business and long sustained tax of his mental powers had given rise to the disturbance of which he complained, I advised complete rest, and at the same time giving him a tonic, as he was somewhat anemic, though in good flesh. He left my office in good spirits, intending to spend a month or two in the Cumberland Mountains, fishing and hunting. In about ten days, to my surprise, he returned, saying that he believed, had he remained up there a week longer, he would have gone crazy; that, while he was away, he did not think he had averaged two hours' sleep in the twenty-four, and having nothing to do but to think of himself and his condition made him worse than when at work. The objective symptoms, as revealed by an examination, showed an excessively hyperesthetic urethra, so much so that the introduction of a soft bougie caused him to partially swoon and break out into profuse prespiration. He was allowed to remain upon the table, in recumbent position, for half an hour, when he fully recovered, saying that the instrument did not pain him very much, but that it caused a peculiar, indescribable sensation that rushed to his head and caused blindness. The night fol-

lowing he had the best sleep that he had experienced for six months. I had him inject a ten per cent solution of verbascum three times daily for a week in order to allay the hyperesthetic condition of the urethra before proceeding further with the examination.

Upon questioning him further upon the subject, I was able to elicit from him the fact that in his early youth he had practiced masturbation to a very limited extent, but had not done so for fifteen years prior hereto. He also admitted that he had attempted intercourse twice only and had such an utter failure, and was so disgusted with himself, that he had never had sufficient confidence to make a third effort. He had noticed a milky discharge at times just preceding the passage of urine, and also when at stool, especially if costive.

Further examination of the gland showed it to be excessively sensitive both through the prostatic urethra and rectum. A bougie was introduced every third day into the bladder, and a suppository composed of five grains each of boric acid and aristol introduced into the rectum at night. At the end of the third week urethral cataphoresis was instituted. The treatment was similar to that given in the former cases, except that only cataphoresis was used and only once a week. Complete recovery followed after four months' treatment.

Case IV.—Prostatitis, Epilepsy.

Married; aged twenty-eight, thin, nervous, wild eyed and as restless a man as I think I ever saw. He was born and raised in the country by an intelligent, well-to-do widow. At about fourteen he began masturbating, and at sixteen had epileptic fits. They assumed a periodicity and at first recurred about every four weeks, then every two weeks, often followed by two or three attacks in one or the

succeeding day. They continued to grow more frequent and severe until he would have two or three attacks a week. He was at first treated by his local physician with bromides, which controlled them to some extent in frequency and severity, but at the expense of his physical and nervous system. He went the round of neurologists in New York, Cincinnati and St. Louis for ten years. The last physician, after having had him under treatment for more than a year, trephined him, as he said, for too much blood upon the brain. Still there was but little temporary relief. He had taken bromides until he was almost an imbecile, when he returned home. His local physician advised him to get married, which he did about nine months before coming under my care.

The objective symptoms, as determined by an examination, revealed phimosis in a marked degree, the glans penis and meatus being red and very sensitive. The urethra was so extremely hyperesthetic that an attempt at introducing a bougie almost threw him into convulsions. My first step in the way of treatment was to circumcise him, then by the use of injections of verbascum, to allay the supersensitiveness until I was enabled to make an examination of the prostate, which was quite irritable and sensitive. On account of the extreme tenderness of the urethra and prostate I passed a bougie only once a week, continuing the injection at the same time. The bromides were also continued, but in smaller doses. He had been taking the bromide of ammonium in scruple doses three times daily. I gave him bromide of sodium in ten grain doses three times daily, gradually diminishing to eight, five, then five twice a day. The epileptic attacks became less frequent and severe until they again assumed periodicity, returning every twenty-eight days. I had him discontinue the use of the bougie and began that of cataphoresis

with mild solution of verbascum. Patient was under treatment fourteen months. For five months before he was dismissed he had not had an epileptic attack, nor had he taken a dose of bromide for three months. Eleven and one-half months from the time he began treatment his wife was delivered of a girl baby. The patient became quite strong and corpulent, returned to his mother's farm, and I have not heard from him since.

Quite a number of cases similar to the last two have come under my observation. They were traceable to disease of the prostate and exhibited a variety of neurotic disturbances as a result of masturbation, continence, or excessive sexual indulgence.

In the treatment of this class of diseases, when I suspect the lurking of gonococci, and that the prostatitis is due to the toxins secreted by these germs, I use ichthyol or other germicidal agents by means of cataphoresis, after having allayed all acute symptoms by the process before described. In those not due to gonorrheal infection, I prefer aqueous extract of verbascum, thuja, echinacea, or a combination of two per cent solution of equal parts of the latter two, and used in the same way.

Case V.—Prostatitis, Vesiculitis, Prostatic Urethritis.

Single; aged thirty-three. The only subjective symptom of which this man complained was total impotency. Otherwise he was in fairly good health, and attended his business daily. He had never indulged in alcoholic drinking. He had masturbated some in early youth, but abandoned it quite soon for sexual indulgence, which he carried to great excess. This inordinate indulgence was maintained for five or six years, when an impairment of function was noticeable. This condition continued to grow worse, until

a physician was consulted, who prescribed aphrodisiacs. Temporary excitement followed the use of the drugs, which was soon followed by complete collapse. Other drugs were tried without avail. The physician endeavored to persuade him, as he had no apparent physical ailment, that "it was all in his head." He never had gonorrhea, or any kind of venereal disease. A second, third and fourth physician was consulted; each of whom treated him similarly to the first without the least benefit. Neither of the doctors made a physical examination, as they took it for granted, that, as he had never had gonorrhea, there was no lesion of the genital organs causing the trouble. This treatment extended over a period of six years, and, strange to state, no quack remedies were taken in all this time.

Upon passing a *bougie a boule,* I noticed very little sensitiveness until the prostatic portion of the urethra was reached. Examination with the cystoscope revealed an inflamed and granular surface along the floor of the prostatic urethra. The other portion of the canal was normal. The prostate and vesicles were slightly tender upon pressure. As revealed through the proctoscope the rectal mucosa opposite the gland and vesicles was red and somewhat inflamed, but not abraded.

On the second day, after the examination, No. 14 A. bougie was passed annointed with benzoinol ointment. It entered the bladder quite easily, and with very little irritation. Two days thereafter cathodal electrolysis, with No. VIII electrode 14 A., using ten per cent strength of verbascum, was introduced. This application was attended with a current strength of ten m.a., and of five minutes duration. Two days afterwards a sinusoidal treatment of the prostate and vesicles through the rectum was given. Applications were given alternately through the rectum and urethra for ten weeks. The nocturnal emissions oc-

curred only about once every three or four weeks. At times he would pass six weeks without an emission, which I did not consider abnormal, nor did they depress him. This proved to be one of the most obstinate cases I ever treated, which was due evidently to the long continued use of aphrodisiacs.

CASE VI.—PROSTATITIS, VESICULITIS AND URETHRITIS.

Single; aged twenty-seven; gonorrheal origin. This young man had gone the rounds of first the druggists, then the quacks. He was suffering intensely from dysuria, pain in the back, perineum and left groin. There was a gleety discharge, which, at times, was profuse, then again, very scant. It was his first attack, and it had been running for eighteen months.

His treatment had consisted of injections, systemic medication, irrigations and sounds. The meatus was very much contracted, and the urethra was tender throughout its entire course. There were localized patches along the canal much more sensitive than at other points. The rectum was quite tender and often protruded while straining to void urine when at stool. The parts were so tender that I did not attempt a thorough examination at first. I had him inject a ten per cent solution of aqueous extract of verbascum five times daily. He was also instructed to introduce a suppository of boric acid, ten grains, and extract of belladonna, three-quarters of a grain, night and morning. After three days the acute symptoms had greatly subsided, when the benzoinol ointment was begun. Examination was made at the end of a week, disclosing three granular patches in the urethra; the first at one inch back of the meatus, the second at six inches and the last in the prostatic portion. The rectum was inflamed and abraded opposite the prostate and very red and tender high up and about the vesicles.

The treatment was similar to that before described, except that ichthyol was used in cataphoresis, it being a more decided germicidal agent. The injection was continued during the first month's treatment to control the urethritis. Recovery followed three months' treatment.

There are many similar cases to these with various complications. At times the bladder is involved but it very rarely requires special treatment. It readily recovers as soon as the other troubles are relieved. It is exceedingly rare that the gonococci invade this viscus; and especially with young men whose urine is almost invariably aseptic and noxious to these germs.

Occasionally I find some cases where ulceration upon the floor of the prostatic urethra resists the methods of treatment before detailed. In such cases I bring the ulcer into view by means of the cystoscope, which I prefer for this part of the canal to the urethrascope, and touch it with twenty per cent of ichthalgon or fifty per cent of argyrol.

Where the prostate or vesicles are very tender, I often suspend urethral treatment for some days, and apply through the rectum to these organs the secondary faradic current with from fifteen to twenty thousand ohms resistance. This treatment acts as an analgesic and allays local irritation.

CHAPTER IV.

CHRONIC CONGESTED ENLARGEMENT OF THE PROSTATE.

This affection of the gland is common in middle age, and occurs more frequently between the ages of forty and sixty. It is, however, not infrequent as early in life as thirty-five and even past seventy without the existence of senile or fibrinous hypertrophy. I have had three cases—one seventy-two, another one year older and a third seventy-nine—with congested enlargement, and inflammation of the gland, seminal vesicles and neck of the bladder, without fibrinous induration.

The idea, so generally prevalent among the profession, that, when a man past forty or fifty has any disease of the prostate, it is indurated hypertrophy and incurable, is erroneous. This disease of the gland is one of passive venous congestion, soft submucous infiltration and a swollen enlargement of the organ, which generally results in inflammation not only of the gland itself, but of most all the other pelvic viscera. It is somewhat analogous to the congested and inflamed condition of the uterus and its appendages. Not every woman that has venous stasis and an inflamed womb has fibroid tumors developed within its walls. In fact, the latter is rare as compared with the number of cases of the former. In like manner fibrinous tumors, or hypertrophy of the prostate, is rare as compared with the numerous occurrences of congested enlargement.

I have treated quite a number of cases of this class of prostatitis, that had been treated by different physicians for many years, and pronounced hypertrophy and incurable. Some of these cases had not only been treated by the family physicians, but by many of the leading specialists in this line.

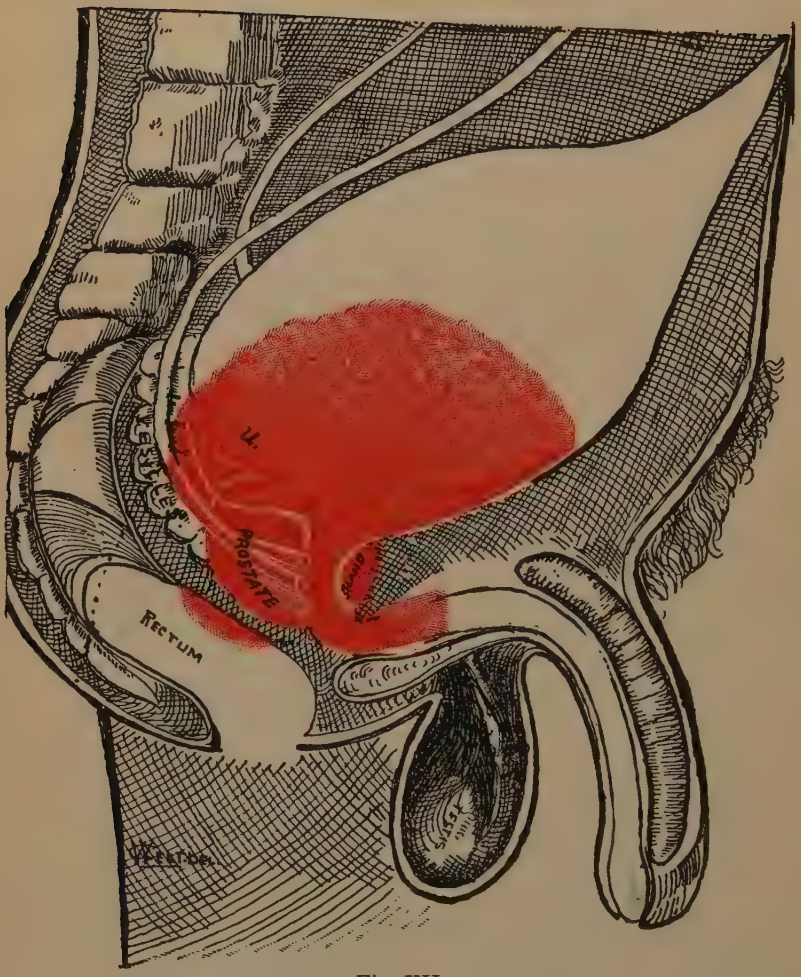

Fig. XII.

It is somewhat difficult in some cases to differentiate at first between congested enlargement and fibrinous indurated hypertrophy. The diagnosis will be considered more at length under the head of diagnosis that will follow upon this subject. I shall add here, however, that, basing a statement upon my own clinical experience, at least twenty cases of congested enlargement of the gland occur to one of hypertrophy. I do not include in this estimate chronic prostatic folliculitis common to young men.

Cause.—The most potent etiological factors, productive of this form of disease of the prostate, are common with those that excite chronic inflammation of the gland as detailed in Chapter III. When folliculitis is not arrested and it is permitted to extend and induce parechymatous prostatitis and plastic exudation, interstitial infiltration is the natural sequence. The exudate, thus produced, extends to the muscular fibers, and its pressure upon the blood and lymph vessels increases stasis, and chronic enlargement and inflammation of the entire gland results.

Inordinate indulgence in alcoholic liquors, whether characterized by excessive bouts of drinking or a moderate though constant habituate, excites and increases congestion of the gland; and, where any previous lesion of any part of the genito-urinary tract exists, it is aggravated. Especially is this fact more apparent when beer or fermented wine is employed.

Since it has become a proven fact that, in from seventy-five to eighty-five per cent of gonorrheal cases, the cocci invade the gland, and there remain dormant indefinitely, producing poisons that maintain a slow though constant irritation, besides that engendered by the germs themselves and the debris of their cadavers, chronic inflammatory enlargement of the gland should receive more prompt attention than is generally accredited it. One reason that

it fails to arouse the uneasiness its importance demands is because of the insidious manner of the progress of the disease, and of the variable character of the subjective symptoms. At times all symptoms may be entirely lacking, or they may recur in a somewhat aggravated form necessitating the consulting of the family physician, who may not give it the significant attention requisite, and usually dismiss the case, without examination, by prescribing a diuretic, and permit the development of the gland until it becomes quite serious.

Any form of dissipation aggravates the trouble; but it has been particularly noticeable with that class of men who have at some time of life been addicted to alcoholism and its companion in crime, excessive venery.

Lesion of the gland, whether of gonorrheal origin or due to other causes, is more easily excited by stimulants, at least for a time, until a complete breakdown follows. In other instances the irritation arising from lesion of the gland, whether due to dissipation or other causes, creates an insatiable sexual desire, that affects the central nervous system to such an extent as to cause mental disturbances of various kinds. Such persons are often too modest to reveal all the facts to their family physician, and frequently endeavor to deceive even the specialist whom they may consult. It is much better, in such cases, for total impotency to supervene than to provoke an immoderate drain upon the nervous system, by excessive sexual congress, which often results in paresis, impaired memory or even insanity. It was no doubt due to this fact that only a few years ago castration was advocated, and performed quite frequently for insanity. It was claimed that marked relief followed the operation in some cases, while others were reported as cured.

Ulceration of the rectum, whether resulting from pros-

tatitis, is usually concomitant therewith, or, originating from other causes, evidently provokes and maintains prostatic congestion and inflammation, on account of its being in such close proximity to the gland.

Horseback riding, and especially those who do very much of it, aggravates an existing prostatitis, even though it may not be the prime cause of it. I have found this trouble quite prevalent among country physicians, who are compelled to visit their patients on a horse. Bicycle riding has equally as bad, if not worse, effect upon the gland. I do not think moderate riding either upon a horse or wheel has any injurious effect upon the prostate, when it is in a healthy condition, and the rectum is free from ulceration. In fact, the irritation is transmitted to the gland by the saddle through the rectum and lower urethra.

Cold often excites congestion of the prostate, and, when prolonged or habitually exposed, it especially aggravates an already inflamed gland. Violent and long continued use of instruments are potent causes of enlargement of the organ, and especially when large sounds are employed, pressing upon the inflamed gland. The practice is a common one and is generally advised by surgeons; and, in fact, is almost universally used. Unless the sound is handled by a skilled operator the end of it strikes the gland in such way as to do much harm.

Strong injections and cautery applications to the prostatic urethra often produce serious trouble. The administration of aphrodisiacs for impotency, which is a common symptom of this disease, has a pernicious effect upon the gland. The exciting by these medicines, of a diseased gland, incapacitated for its normal function, to produce an abnormal congestion and orgasm, often provokes serious trouble. It is a very general practice of giving these remedies in a blind manner, without having examined the pros-

tate with the view of discovering the real cause of the trouble.

SYMPTOMS.

The symptoms are somewhat common to those of chronic prostatitis of young men, except that, in this form of disease, there are more complications, and, in some cases, a higher degree of inflammation, as a result of the large size of the gland impeding the free flow of urine. Often vegetative growths spring up in the prostatic urethra, and around the vesicle neck, which at times project into the anterior part of the bladder. These may develop into polypoid tumors, that flop about the neck of the bladder like a valve, and shut off the flow of urine, for a time. These tumors are very vascular and inclined to periodical hemorrhages.

Prostatorrhea may be constant or periodical, and is often mistaken for spermatorrhea. The former may be so slight as to appear only in the form of gleet; or it may precede the flow of urine, when it has accumulated within the prostatic urethra, in the form of a milky fluid. Others have the white discharge just at the cessation of the passage of the urine. When the latter occurs the discharge accumulates within the prostatic ducts; and by spasm of the prostatic sphincter in expelling the tardy urine, ejects also this secretion. In other cases, and especially when vesiculitis coexists, spermatic fluid may also pass. These fluids are usually mixed with pus and mucus.

The urine in these cases is almost invariably abnormal. Its changed condition depends mostly upon the extent of lesion, the size of the gland, the length of standing, and the bladder complications. The vesicle neck is the first part of that viscus to become involved, and, in most cases, it does not extend further, unless of very long standing. The urine generally changes from its normal acid reaction

and aseptic condition to that of alkaline, and is no longer innoxious to bacteria, but favors their development. The action of bacteria upon exfoliated mucus favors pyogenesis and the production of ammoniacal urine. The latter is exceedingly irritating to the bladder and especially at the neck, causing frequent and painful urination. This is particularly noticeable during the day, when standing or walking, as the urine gravitates to the neck or tender part of the bladder or prostate. The prostatic urethra, being, as a rule, the most sensitive part of the genito-urinary tract, is often rendered spasmodic by the acrid urine, and the unpleasant sensation of still more to be voided even after the evacuation of the bladder; or it may cut off the flow for a few moments, when it again relaxes, and allows the passage of a small quantity of the urine. The irritation of the gland or bladder is frequently reflected to the kidneys, causing polyuria, that is mistaken by many for diabetes or Bright's disease. This condition may last a long time without effecting any organic disease of the kidneys.

Systemic disturbances are quite common, either as a result of metastasis, or as a direct sequel of the diseased gland. Toxins or ptomaines emanating from the latent gonococci, and carried by the blood currents to the joints, nerves and serous membranes, induce metastatic rheumatism, neuralgia, peritonitis, perityphilitis or various other troubles from the back of the neck to a pain in the heel.

As a direct or reflect neurotic disturbance, arising from disease of the gland, the sciatic nerve, or some of its branches, is the most frequently affected. Pain over the hip or in the calf of the leg is common. This may also extend to the back, and become so serious as to impair the use of one or both legs.

There is often tenderness in the region of the perineum,

or a dull heavy aching sensation, which is felt while standing or sitting. I have known some who could not ride in a buggy with any degree of comfort; others who were necessitated to carry rubber cushions, hollowed out in the center, around with them.

The objective symptoms revealed by examination through the rectum is an enlargement of the gland, which generally protrudes as an oval mass upon its front wall. If inflammation of the gland coexists, there is either redness or lesion of the mucous lining of the bowels at that point. Upon examination with the sigmoidoscope (Fig. VII), the same condition of the membrane may be noted higher up, opposite the seminal vesicles, together with an inflammatory complication of the latter.

Pressure upon the gland, through the rectum, determines the extent of the inflammatory state which is usually reflected to the glans penis or perineum. It requires an experienced touch of the finger to determine whether this enlargement is due to a swollen condition (the result of passive venous stasis and soft infiltration) or to indurated hypertrophy. In the former, both lobes of the prostate are usually about equally swollen and tender, and, while somewhat firm to the touch, do not feel cartilaginous. The lobes of the gland appear more symmetrical, and are not nodulated. In indurated hypertrophy the portion of the gland that is involved is quite firm and in most cases feels nodulated, just as fibrous tumors as developed in any other organ of the gland (as in the mammary) might reveal themselves to the touch. This subject will be considered more fully in the chapter of senile hypertrophy of the prostate.

COMPLICATIONS.

The neck of the bladder invariably becomes involved, and is generally quite sensitive to the touch of an instru-

ment or to the effect of acrid urine coming in contact with it. The inflammation is usually confined to a limited area of the mucous lining of the bladder immediately adjacent to the neck or base of the prostate, as illustrated in Plate II. But in cases of long standing, attended with much congestion and inflammation of the prostate, the trouble extends and may involve the entire mucous lining of the bladder. And as this condition of the bladder is the result of prostatitis, the latter must be relieved before any permanent benefit can be expected in treatment of the former. In fact, I have found that in the large majority of cases the little benefit that would accrue from the antiseptic solutions in washing the bladder is more than counteracted by the ill effects of passing an instrument for the purpose, over an inflamed prostate. Besides, when the bladder is in the state to require such treatment, the urine is no longer aseptic, but the putrefaction of the exfoliated mucous favors pyogenesis.

Andrews and others have demonstrated that the bacilli which inhabit only that portion of the urethra near the meatus and in the fossa navicularis, are constantly present and non-pathogenic in this region, but become pathogenic when carried by instrumentation to the bladder, and set up a muco-purulent discharge, when the condition of the urine favors such. Andrews further states that the use of antiseptic agents sufficiently strong to destroy bacilli in the bladder would be injurious to the tissue with which they come in contact. I have noticed in a great many cases where muco-purulent matter existed in large quantities in the urine, that the amount diminished as soon as the wash was discontinued and the inflammation of the gland was reduced. There are, however, cases in which the catheter is necessary to evacuate the bladder, and in such instances the use of some antiseptic solution in irrigating it is of great value.

The urine in these cases is usually of deep straw color, of acid reaction and high specific gravity. Normally it is of slight acid reaction, greater in the morning when first voided after being retained through the night, less so about two or three hours after breakfast, when it may become neutral or slightly alkaline. Should it retain a strong acid reaction throughout the day, the condition is abnormal and irritating to any chronic or acute inflammatory tissue with which it may come in contact. The abnormal acidity of the urine in these diseases is due mostly to crystals of uric acid, which usually coexist with those of calcium oxylate. Aside from their chemic action, these fine needle-like crystals are mechanically quite irritating to mucous surfaces. Epithelia, mucus and pus are also present in proportions varying with the extent of prostatocystic involvement.

In other cases phosphatic urine predominates. Here the urine is over alkaline and more than neutralizes the normal condition of acidity or even the excess as caused by uric acid. It is exceedingly acrid in its local effect, and, in connection with mucus and pus, favors the development and propagation of bacteria. It is usually of light color and, upon standing, has a flocculent mass of mucus and pus which are readily deposited. After some hours it has an exceedingly offensive odor; and, if urea be present in large quantity, ammonia is given off. Urea often exists in large quantities and is deposited in red or blood like crystals on the sides and bottom of the vessels.

While these abnormal constituents of the urine are irritating and aggravate prostato-cystitis, yet they are the result and not the cause of prostatitis.

With alkaline phosphatic urine, some neurotic complication is usually concomitant, especially in the case of pa-

tients who notice the deposit in the urine and associating it with Bright's disease, contemplate an early demise.

As these abnormal conditions of the urine are only symptoms, and not an idiopathic disease, the trouble which gives rise to them must be relieved before any permanent benefit will result. It is necessary however to remove, as far as possible, all properties of the urine that are irritating to the prostate, until the latter can be restored to its normal condition.

Variations of the urine are symptoms of much importance in this disease, and should be given more than passing observation and chemic test. The epithelial cells, Bottchers crystals, sympexia, and spermatozoa as revealed by the microscope, are symptomatic of special lesions, and indicate the complications that attend disease of the prostate. Thompson's and Goldenberg's two glass test, as well as Jadassohn's three, may be misleading unless subjected to microscopical examination. The first part of the urine passed into a vessel may contain a large quantity of floating shreds or glary mucus, and the latter part voided into a second vessel may be free from any debris. It would be evident that these shreds were washed from the urethra, but it is by no means proof that they originated there. Secretions from the prostate or vesicles escape into the urethra, pass along that canal until they become dried and cling to its walls. Mucus and other abnormal secretions, being of sticky material, form shreds of various size and shape. Treatment confined to the urethra alone would never relieve the condition. In many cases treatment of the prostate alone would clear them up, while in others the vesicles too require treatment. In many instances, where the bladder is affected, a large quantity of mucus and pus appear in the urine, and especially when the gland is swollen or enlarged so as to interfere with the

thorough emptying of the viscus. Blood may also be present, either escaping from the prostate or urethra, or mixed with the urine. Dark colored urine indicates its presence, and signifies, in the majority of cases, the existence of a polypoid or vegetative growth protruding from the posterior prostatic wall.

PROSTATIC CALCULI.

There are certain concretions, so called prostatic calculi, that form in the prostatic follicles and ducts after adult life. Sir Henry Thompson, who has described them fully, reports that, "of one hundred prostates examined, these bodies were found in all of them." In younger subjects they are very small and can be detected only by the aid of the microscope, while in older prostates they can be readily seen with the natural eye. They are entirely distinct from renal or urinary calculi, which begin to form either in some part of the kidney or bladder and continue to develop, by accretion, until they may reach considerable size. The concretions of the prostate are usually small and rarely develop to a size larger than a pea. Inflammatory conditions of the gland, preventing the normal secretions, tend toward developing these bodies, just as a catarrhal condition of the bladder, and cystitis, produce urinary calculi. They are less firm than the latter, and are composed mainly of calcium and sodium phosphate, both of which substances are electrolytes, and are readily dissipated by interstitial electrolysis.

Owing to their exceedingly small size, they very rarely give rise to trouble in young men; but in older men with swollen inflamed prostates, they act as foreign bodies pressing upon the different portions of the sensitive gland, and give rise to irritation, which is manifested by frequent micturition, vesical tenesmus and pain in the region of the

prostate, perineum, glans penis or fossa navicularis. They are usually rough upon their surface, and, when they develop to the size of a pea, often give rise to prostatic abscess.

Fig. XIII. shows a photo engraving of specimens of these concretions, that were passed by a patient sixty-one years of age, with an exceedingly tender and irritable prostate, during the evening following a treatment by cataphoresis. The urine was passed into a porcelain vessel, and allowed

Fig. XIII.

to remain over night. On the following morning it was poured off, the residue adhering to the vessel. The vessel was then rinsed with clear water and the residue was scraped from the bottom of the vessel, and preserved. It was firmly glued together by a muco-purulent admixture, which was broken apart in pieces of different sizes, as shown. There was quite a large quantity of these pieces, making in all about a drachm. The large majority of these were destroyed by experimenting upon them with the combined properties of different chemicals and electrolysis, in order to determine the agents that would be most active in their disintegration, and, at the same time, the least ir-

ritating to the gland. The remaining pieces were pasted to a piece of dark paper and a photo engraving, or "half tone," made from it, as illustrated.

These experiments were carried out with a one per cent solution of chloride of sodium and water, as the conducting medium, which is practically the same as that of the prostatic urethra, when the solution is applied to the gland.

The experiments were first made with non-oxidizable electrodes, without medical agents, first the anode, then the cathode being used as active electrodes. These were made with mild currents of long duration, then strong for a short period, with due heed to the electrolytic changes of the conducting medium, and the presence of oxy-chloride at the anode as a result. Oxidizable electrodes, of various metals, with the anode as active pole, were next tried. I then experimented with various medicaments, using both oxidizable and non-oxidizable electrodes, affecting thereby changes upon these deposits by means of cataphoresis and interstitial electrolysis. The conclusions at which I arrived by the experiments and chemical observance were that the concretions are subject to electrolysis. Cataphoric medicaments are only required to reduce any inflammatory condition of the gland which served to increase the calcareous deposits.

SYMPEXIA.

In addition to the calcareous formations that are so generally present in the ducts and follicles of the congested prostate, there exists occasionally a lumpy, gelatinous substance of a whitish or light red color, called sympexia. These bodies vary in size from that of a small pea to twice that amount. They frequently become quite firm and provoke much local irritation of the gland and vesical neck, causing frequent and painful micturition, and even abscesses in the prostate, when they become too firm and

large to pass off through the ducts. They have also been detected in the seminal vesicles, where doubtless most of them begin to form from pent up, unhealthy semen and the morbid secretions that result from the inflammatory condition of the vesicles. They no doubt assume their firmness in their tardy course through the prostate, where they mingle with the calcareous matter as formed in the latter.

They do not pass at regular intervals, seldom daily, and usually follow the emptying of the bladder or the discharge of fecal matter while at stool. I have noted some cases where they would pass once or twice a week, then not again for a month. When they pass often, they are of lighter color and less firm than those that have been pent up in the gland for a longer time. Their mere presence causes great annoyance to many men who mistake them for semen. They may occur in any stage of prostatitis, in young men as well as older. I have noted them more frequently in young men, leading a life of continence, or in middle aged men of long standing prostatitis.

THE LIVER.

Just what relation the liver bears toward the prostate I am unable to state, but in common with other investigators, I have noticed that there is a functional disturbance of the former following disease of the latter. The liver performs the important role of being the chief organ in converting the insoluble uric acid into soluble urea; and, whenever there is a disease of the prostate, crystals of uric acid, often in large quantities, make their appearance in the urine. It is claimed by some that this arrest of the function of the liver is due to nervous reflexes provoked by disease of the prostate.

CHAPTER V.

SEMINAL VESICLES.

The seminal vesicles and prostate, owing to their contiguous relations and allied functions, and to the fact that the latter is tunneled by the ducts of the former, are in close pathologic relations. As the swollen prostate must inevitably encroach by pressure upon the ejaculatory ducts, limiting thereby their elasticity and diminishing their caliber, increased exertion is necessarily required to expel the semen through the narrow channels; and, should these organs be inflamed or tender, pain would follow the ejection of semen during or immediately succeeding sexual intercourse. The pain is usually felt in the region of the perineum, lower part of the rectum, or along the course of the vas deferens in one or both sides of the groin.

RECTUM.

With the exception of the neck of the bladder and seminal vesicles, the rectum is most frequently involved as a result of chronic prostatitis. The part most often affected is the front surface immediately opposite the prostate. Inflammation of this organ, owing to its close proximity to the rectum, readily extends to the latter. The plate shows the position where it most often occurs. If the inflammation is of short duration and the gland is only slightly affected, the rectum at this point will show a condition of redness, with only a limited protrusion of the prostate, and without abrasion of the surface of the mucous membrane. In cases of long standing prostatitis, where there is considerable protrusion of the gland into the

rectum, there is, as an almost invariable result, lesion of the mucous surface, and this being constantly irritated by the passage of fecal matter, in turn reacts upon the prostate, serving to increase the irritation and inflammation of the latter.

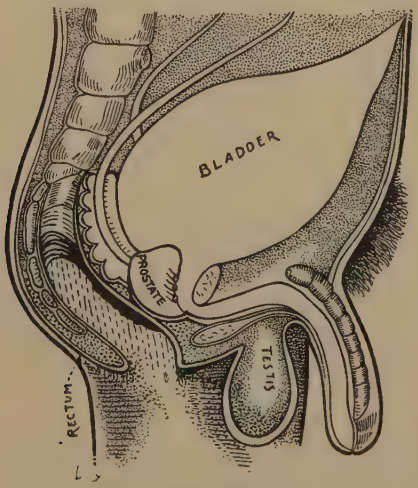

Fig. XIV.

KIDNEYS.

The kidneys are very rarely involved, although the pain in the lumbar region of the spine, together with the turbid urine, often leads one to suspect such disease.

The pain felt in the lumbar region, at about the fourth or fifth vertebra, has no connection with the kidneys, though it is usually spoken of as "pain in the kidneys." This pain is in the center of the back and very low down, while that of the kidneys is much higher, on each side, and beneath the borders of the lower ribs, as illustrated by Fig. XV.

The inflammation occasionally extends from the prostate to the bladder, thence through the ureters to the pelvis of the kidneys, provoking pyelitis, and even interstitial nephritis.

Some twelve years ago I attended a case, of fifteen years' standing, suffering with stricture, prostatitis, cystitis and nephritis. The trouble extended to the pelvis of the left kidney, and subsequently to the entire organ. Suppuration ensued, which was followed by an abscess on the back over the left kidney. The abscess had formed, and had been evacuated three times during the preceding two years, before I saw the patient. He had suffered constant pain in that kidney, and was in very bad health. The abscess formed, and was evacuated only once during the early stage of my treatment. He afterwards became strong and healthy, and lived eight years. I never saw him during his last illness. His death was reported as due to nephritis, though no autopsy was made.

TREATMENT.

The treatment of chronic congested enlargement of the prostate gland is somewhat similar to that described in the former chapter on prostatitis. One must take into consideration the age and health of the patient, the degree of discomfort to which he is subject, the extent of complications, tenderness or inflammation of the gland itself, urethra or rectum, and the urgency or necessity for the relief of any conditions from impending danger to life.

There are only two ways by which we can reach the prostate for direct treatment, viz., through the urethra or rectum; and as these organs are so closely related to the prostate, both by contiguity and continuity of structure, and are in such close sympathetic relation with it, they are generally pathologically involved. They therefore

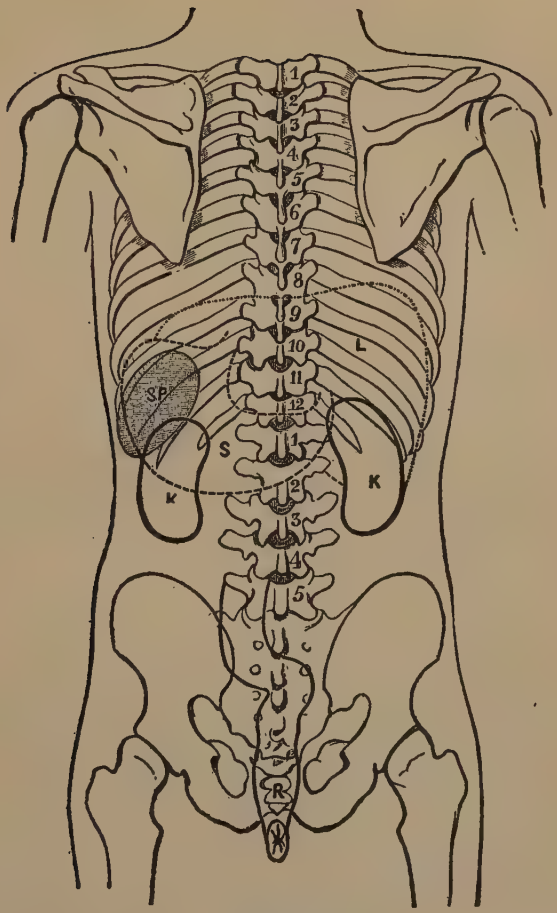

Fig. XV.

require treatment in order that the prostate may be reached without causing pain or inflammation to these channels, for the inflammation is liable to extend and increase the already existing trouble of the gland. So my first step is to give relief to all symptoms of an urgent or dangerous nature; then allay, in so far as possible, all inflammation of the urethra and rectum, by rendering the passage of urine and fecal matter over these tender, and probably abraded surfaces, as non-irritating as possible.

DIET.—In ordinary cases I rarely restrict my patients in their diet, except in regard to particularly indigestible food, such as cabbage, pork, cucumbers and the like. I do prohibit alcoholic liquors while the patient is under treatment, and especially fermented ale, beer or wine, as they directly tend to disturb the circulation, liver and kidneys, causing an excessive precipitation of uric acid, and biliary discharges, and increasing local irritation to the urinary and rectal passages, and in particular to the prostatic urethra, and neck of the bladder.

I have mentioned in a former chapter that I began the radical treatment with my urethral electrode No. 14, A, which is passed down the urethra gently, after having previously made the electric connections before described, and with three to five milliamperes in the circuit. During the first treatment the application should not last over one or two minutes, and the electrode should be passed over the entire surface with the current in the circuit, to rid the canal of whatever granulations might exist at any point in its course. Cataphoresis should not be used during the first treatments, and if the urethra or prostate is very tender, the electric treatment should not be given oftener than every third, fourth or even seventh day. Cathodal applications should always be used during the first few times.

As a rule blood will not be produced by these treatments, if the preliminary steps are attended to. But it occasionally happens that some highly congested granulations or vegetative growths are denuded from the surface of the prostatic urethra; in which case a drop or two of blood may follow. No harm will result, but the operator should be warned thereby not to apply the electric treatment too often or with too great strength. I usually follow up such a condition with an injection of verbascum, if it had been discontinued; then two days afterwards with the bougie, with benzoinol, or an ointment of the extract of verbascum and benzoinol, which is quite soothing. At other times I use with mild electrolytic applications a mixture of benzoinol and verbascum with electrode No. VIII. Cataphoresis is only slightly effected by this means, as osmosis of oils without emulsification does not take place. Only a local soothing effect is produced, but the oil has the additional property of protecting the surface for a time from the irritating secretions that may occur.

It is also essential to have the patient void urine just prior to the treatment, then to remain upon his back for a few minutes afterwards, that the urine, by gravity, may remain away from the vesical neck, or prostate, until whatever irritation may have been caused by treatment has subsided. All of these points, however trifling they may appear, require careful consideration in view of the tender and inflamed condition of the gland and adjacent organs.

After the acute symptoms have subsided, cataphoresis can be employed with impunity. This is effected in two ways, first by means of liquid medicines, as illustrated by Fig. X; secondly, by anodal applications of oxidizable electrodes. The latter is accomplished by using a metal point to an electrode of copper, zinc or iron, when there will form the oxy-chloride of copper, zinc or iron. Each

of these excites a quite sharp, burning sensation and should be applied only directly to the seat of the trouble, which is usually on the floor of the prostatic urethra. These new substances of oxy-chlorides of copper, zinc or iron, after forming, will penetrate the gland by following the direction of the current, from positive to negative, and cause a dull aching sensation throughout the region of the prostate, perineum or rectum. They should be given only a short time and with a mild current, especially during the first few treatments. The electrode will adhere to the tissue, and should not be removed until the current has been reversed for one or two minutes, when it will loosen.

An acute discharge often follows such applications, and the patient should be advised of the fact, or he may suspect that he has an attack of gonorrhea or that he has been infected by the instrument. Obstinate chronic cases are much benefited by this method of treatment and yield more readily through conversion of the chronic into an acute state for the time. Injections of ten to fifteen per cent of verbascum or argyrol readily allays the acute condition.

Instruments should never be passed into the urethra daily, and from the very beginning of treatment the rectum should be carefully examined. Should it be very tender, as is often the case at first, suppositories of boric acid and aristol, five grains each, inserted night and morning, will soon put it in condition for examination by speculum or sigmoidoscope without anesthetising the patient. I alternate the treatment by giving rectal applications, as illustrated by Fig. XI, on the days following the urethral treatment. I began the rectal treatment by using the secondary faradic current, interposing at the time, into the circuit from two thousand to twenty-five thousand ohms resistance. This treatment is very soothing, and, in most cases, affords instant relief from any

uncomfortable feeling that may exist in the region of the perineum, rectum or prostate. Medicinal applications are made to the rectum at the same time.

While the oscillating molecular movements, as induced by the current, favor absorption of the medicines, yet cataphoresis is not effected thereby. The benefit accruing from the secondary faradic current is chiefly, if not wholly, that of its mechanical action; and, owing to the close proximity of the pole to the gland, as shown by Fig. XI (the current being concentrated and flowing only in that direction), the extremely rapid vibratory motions exerted upon the molecules of the morbid tissues so disturb them as to cause their absorption by capillary attraction. This may be illustrated by placing medicine of any kind upon the skin of any part of the body and rapidly rubbing it, absorption takes place much more quickly than if the medicine remained quiescent.

Fig. XVI illustrates the application of a longer electrode to the seminal vesicles. Gentle backward pressure exerted by the fingers upon the lower end of the electrode causes similar movement of the upper end upon the vesicles, and produces mild contraction of the latter. This has a soothing effect upon these sacs, and at the same time rids them of their morbid contents, reducing the inflammation of the organs, and that, too, without pain. To procure the best results, this application must be made with ten thousand ohms resistance interposed.

After all acute tenderness of both the prostate and vesicles has subsided, I apply to both organs the sinusoidal current in the same way, and with high resistance interposed, as before described. This current as explained in Chapter VIII both acts mechanically as the faradic, and also exerts a magnetic influence upon the atoms of the tissues, causing molecular disturbance by the attractive

and repulsive power of unlike and like, so as to favor their solubility and absorption, and their expulsion through the medium of discharges from the gland. It also exerts a strong germicidal effect.

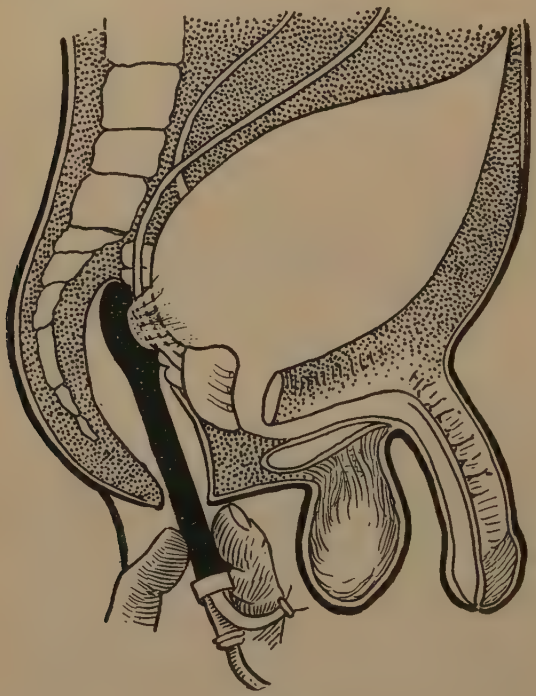

Fig. XVI.

Whatever causes the pathological condition of the prostate—whether it is the inhabiting of its mucosa or cellular tissue by latent gonococci, or bacteria adapted to the locality of its special epithelial lining—it is certain that diffusion of medicinal agents by cataphoresis, and interstitial electrolysis within the gland, disturbs these germs by rendering their habitat inimical to their existence.

Just how this is accomplished it is somewhat difficult to explain; but bacteriologists have demonstrated that the gonococci favor an alkaline medium, but whether they are destroyed by cataphoric diffusion of anions, as of acids, oxygen, etc., or die from lack of a suitable medium, when the gland is aroused to activity, or the dynamic effect especially of the sinusoidal, or directly as the result of electrolysis as induced by cataphoresis, I cannot state; but I do know, as a fact demonstrated by numerous results of such treatment, that the pathogenic condition is changed, the morbid discharges are arrested, and the patient is restored to health. To know the precise result of such treatments is more gratifying to me than to discourse at length upon some far-fetched scientific theory.

The method as here detailed effects all that can be accomplished by digital manipulation of the prostate or vesicles; and, too, without irritation, I often have complete emptying of the vesicles follow rectal treatment by means of the sinusoidal application. Infiltration or thickening of the rectal mucosa also occurs around both the prostate and vesicles, when the disease is of long standing, which is readily dissipated by this treatment.

Treatment of the prostate and vesicles through the rectum can be given oftener, stronger, and of longer duration than through the urethra.

MEDICINAL TREATMENT.

But little constitutional medication is requisite. In some cases where acute symptoms exist, it is necessary to control them for the time until the cause is removed. An acid condition of the urine serves to maintain it in an antiseptic condition, unless the acidity be in excess of 0.43 as determined by acidemetry. In such cases citrate of potassium, or some lithia water or salt, gives relief. I

concur in the view, as expressed by Finger, that the indiscriminate use of alkaline mineral waters in these cases is pernicious. There is a tendency, after passing middle age, to the accumulation of earthy salts in the body (which is conducive to senility, and the constant use of such waters adds to the evil). Besides changing the urine from its normal acid reaction to that of alkaline, it favors the development of bacteria.

When the urine is of light color, and alkaline in reaction, whether due to excessive phosphates or to the decomposition of mucus and pus, cystogen, in five-grain doses, three or four times daily, is indicated. When it is administered it liberates formaldehyde, and acts by controlling to a limited extent the development of bacteria. It should not be continued any great length of time, as it becomes irritating to the bladder and vesical neck. These remedies are only intended to give temporary relief until the cause is removed, which is the relief of the prostate and vesicular troubles.

The bladder is very rarely diseased *per se,* but is almost invariably the result of the extension of inflammation from the prostate and urethra, or to the obstructive flow of urine by the enlarged gland.

Diuretics are only indicated where there is an appearance of symptoms of uremic toxemia, scantiness of urine or an excessive quantity of urea.

Many suffering from long-standing diseases of the prostate become anemic, and the necessity for hemogenic agents arises. For this purpose I have relied upon citrate of iron, which is less irritating to the stomach than most of the other chalybeates.

These remedies are only intended as valuable adjuncts temporarily until radical relief of the gland is effected.

Fig. XVII. illustrates an electrode, as devised by the

author, that marks a new era in the treatment of varicocele, orchitis and their sequels, impotency, etc. It consists of an insulated cup-shaped receptacle, near the bottom of which is a metallic binding post for the attachment of a cord from a battery. On the inner side of the cup and attached to the binding post is a copper plate,

Fig. XVII.

which serves the purpose of diffusing the current throughout the fluid as contained within the cup. When in use the electrode is filled to about four-fifths with plain or medicated water, and the entire scrotum and testicles are immersed therein. That portion of the electrode to which the cord is attached is placed in the rear and pressed firmly against the perineum to prevent the escape of the fluid. A large sponge electrode, seven or eight inches in

diameter, is placed over the lumbar region of the spine. This is better accomplished by the patient sitting in a chair with a thick book at the back so as to press the electrode to the spine. The current is then increased to the desired strength, care being observed not to cause shock.

The current thus applied charges the fluid in the electrode, which passes up through the spermatic cords and other organs, acting as a tonic to the muscular and distended coats of the veins, causing their contraction, thereby relieving their turgescence and tenderness, and giving tonicity to the cords and scrotum, which enables them to support the testicles and maintain them in their normal position without the aid of a suspensory bandage.

Where there still remains impotency or depression of the genital organs after relief of prostatitis, the current thus used, passing through the genito-spinal center and the genital organs, will often restore their normal functions after everything else fails.

This method of treatment does not act as a stimulant or excitant of the genital organs, as do some medicines, to be followed by subsequent depression, but serves as a tonic and restores natural vigor.

Case VII.—Prostatic Enlargement and Melancholia, Obscure Origin.

Bachelor; forty-eight years of age; weight one hundred and seventy pounds. He had practiced masturbation in early life moderately—never had gonorrhea. Always lived in a small town and had been successful in business. Up to his forty-fifth year he had been in good health. About that time he began occasionally to pass sleepless nights, and grew gradually worse. This continued for about one and one-half years, when he became melancholy

and despondent about his business. His brother had noticed, at times, mental aberration, and, after consulting the family physician, decided upon placing him in a sanitarium. The patient tacitly consented to go, but on the evening before the day of departure, he surreptitiously left his home, and wandered about from place to place for more than a month, when, upon inquiring for a physician, he was directed to me.

He was very secretive as to his family and home, but talked very intelligently and freely about himself, his wanderings, habits and the foolish things he did that induced his brother to think he was verging upon lunacy, and of which he himself was cognizant. The subjective symptoms pointing to disease of the gland were quite meager, and he was loth to submit at first to an examination.

The urethra was very sensitive throughout its length, and, in the prostatic part, quite painful to the touch of the flexible bougie. The gland protruded into the rectum to the extent of flattening fecal discharges. Digital pressure upon the prostate through the rectum caused an aching pain in the region of the perineum and bladder.

He was treated alternate days with a flexible bougie that entered the bladder easily. The faradic current was used, each intervening day, through the rectum with ten thousand ohms resistance. The inflammation of the prostate and urethra readily subsided after ten days' treatment, when cataphoresis to the prostate was instituted, both through the urethra and rectum with ten per cent strength of aqueous extract of verbascum. His recovery was rapid, and at the end of the first month he was sleeping normally, and his mind restored. The treatment was continued two months to reduce the enlarged gland. Recovery was permanent.

Case VIII.—Prostatitis, Vesiculitis, Rectal Ulceration.

Bachelor; aged forty-four, had first attack of gonorrhea at twenty-two, which was quite severe, and continued for several months, finally terminating in gleet, and, as he thought, stricture. He had several mild attacks of acute gonorrhea, the gleet continuing during the interim. He had been treated several times for stricture with sounds. He suffered constantly with his back and limbs, and had made several trips to Hot Springs, Ark., for rheumatic arthritis. He was always benefited by the Hot Springs baths, but the pains would recur in from four to six months thereafter. Upon examination I found the urethra slightly tender an inch back of the meatus, and upon the lower surface. The other portions of the canal were healthy, except the prostatic; which was very much inflamed. There was no organic stricture, nor do I think he ever had any, though he had been advised several times to submit to an operation for such. The long standing granular inflammation of the prostatic urethra, with the enlarged gland, had encroached upon the caliber of the canal at that point, narrowing it and obstructing the free flow of urine, at times, when it was acrid; and also the free entrance of an instrument to the bladder.

The gland was swollen as determined through the rectum, and painful upon pressure, which was reflected to the glans penis. Both lobes of the gland were equally involved. Immediately opposite the prostate, upon the front rectal surface, was an elliptical ulcer an inch and one-half long and three-fourths of an inch wide. The vesicles were also tender, and the rectal mucosa opposite them was inflamed and thickened but not abraded. After several examinations of prostatic expressions gonococci were finally discovered.

The acute symptoms were treated as before detailed, which was followed by cataphoresis, using one per cent solution of ichthyol, through the prostatic urethra. The prostate and vesicles were treated at first with the secondary faradic, followed with the sinusoidal current.

The ichthyol had a very happy effect in this case, and was the only remedy used. Recovery was rapid, and there has been no return of pains; it has been three years since.

Case IX.—Enlarged Prostatitis, Cystitis.

Bachelor; aged sixty-nine; robust, had led an outdoor life. He had gonorrhea in early manhood, and quite a number of attacks thereafter. He had suffered with his bladder and prostate for fifteen years, and had been treated by massage of the gland, sounds, irrigation and cautery applications to the deep urethra. He had just left a genito-urinary specialist when he consulted me, who had treated him with large sounds daily for six weeks.

He was suffering with frequent and painful urination, voiding it on an average of every thirty minutes during the day, and hourly at night. The urine was of light color, laden with mucus, pus, urea and of ammonical odor. I did not attempt an examination at this stage, but gave him five grains of cystogen every four hours, alternating with twenty minims of the normal tincture of hyoscyamus to the drachm of triticum repens. In conjunction with this, a suppository, containing ten grains of boric acid and one-half grain of belladonna, was introduced into the rectum night and morning. Rest in bed was also enjoined. After three days the acute symptoms had been allayed, when an examination revealed a congested enlargement of the prostate, prostatic urethritis, and cystitis. He had been washing out the bladder with boric acid daily, which I had him discontinue.

He was treated similarly to those before described, after acute symptoms had been allayed. His improvement was rapid, and at the end of the third month the urine was cleared up, and voided about four times during the day and once through the night. He would occasionally pass the night without having to get up, then again he would have to pass his urine twice in the night. After his return home he continued to improve until conditions were about normal for a man of his age.

Five years later he began having some difficulty in starting the flow of urine; then periodical hemorrhages would occur. By cystoscopic examination I detected a small vegetative growth, almost the size of the end of one's small finger, attached to the lower part of the neck of the bladder. It was highly vascular and would bleed freely when touched. Its free extremity floated about the vesicle orifice and acted as a valve that at times shut off the flow of urine. I had an electrode made, the metal part of which hooked around the tumor, so as to affect it only; the metal end of the electrode was perforated that medicinal remedies could be applied, thus procuring the combined effects of electrolysis and cataphoresis. After the third week's treatment it ceased to bleed, became less tender and showed much atrophy. Six months afterwards hemorrhage again recurred. Cystoscopic examination revealed a short pedical of the tumor with an abraded surface. This was promptly healed and he has had no further trouble with it.

Similar patients have come under my care, suffering with vegetative, polypoid, vascular or semi-fibroid tumors protruding from the base of the prostate into the bladder, which act as a valve to obstruct the passage of urine. Some of these cases have yielded readily to the treatment as described; others have been persistent and unyielding. Those that have proven so rebellious to treatment have been of fibrinous character.

It has been necessary, in some of the latter, to use the electric cautery, as illustrated. (Fig. XVI.)

Case X.—Chronic Enlarged Prostatitis, Vesiculitis, and Cystitis.

The patient was seventy-two years of age, costive, constant pain in back and perineum, the latter necessitating his using a rubber cushion, hollowed out in the center, to sit upon. The urine was alkaline, heavily laden with mucus and pus, one-fifth of which would be a semi-solid mass upon settling; and, at times, strongly ammoniacal. Fecal matter passed in lumps or flattened. He had been treated by the usual methods, with sounds and irrigations. The prostate was very large but not tender upon pressure. The vesicles were similarly affected. The prostatic urethra was quite tender. He had a constant urethral discharge.

Urethral and rectal applications were used to the prostate for six weeks. The improvement was most marked in every way. He returned home, where he remained two months, then came back for further treatment. He was now able to ride about in his buggy, dispensed with his cushion, but was still unable to evacuate his bowels without the use of medicines. There was only a trace of sediment in the urine, and the urethral discharge was scarcely perceptible. He remained under treatment four weeks at this time. The prostate was reduced almost to normal, the urine had changed to an acid reaction, free from sediment, and with specific gravity of 22. He was free from pain. He returned home and I did not see him again for two years. He had been comfortable during all this time, with the exception that he occasionally had quite copious and irritative urethral discharge. Upon examination at this time I found the prostate, about normal in size and non-sensitive. The vesicles were tender, and the rectal

mucosa surrounding them thickened, and unduly red. Applications of five per cent strength of picric acid was used directly to the vesicles with the sinusoidal current daily. The first treatment was followed with diminution of the urethral discharge. This discharge had also rendered the prostatic urethra tender, which required similar treatment. At the expiration of two weeks he was dismissed. I heard from him some time after he returned home, stating that there had been no return of the discharge, and that he was riding horse-back averaging fifteen miles, almost daily.

Case XI.—Congested and Enlarged Prostate, Urethritis, Rheumatic Arthritis.

Married; good physique; aged forty-eight. He had been confined to bed for four or five months prior to seeing me, with polyarthritis. He had been dosed with all the rheumatic remedies about which the profession have any knowledge, with only temporary relief. There was little or no swelling of the joints, but they were attended with much pain and creaking when moving them. He was unable to dress himself, but was able to walk about. The prostate gland was very tender, both through the urethra and rectum. There was no apparent urethral discharge, though the prostatic part of the canal was very sensitive. He began improvement after the first week, and the stiffness and pain in the joints left him at the end of three months' treatment of the prostate and vesicles by cataphoresis.

Case XII.—Enlarged Prostatitis, Cystitis, Rheumatic Arthritis.

Bachelor; aged thirty-eight, of robust physique. Had gonorrhea at twenty-two, followed by several attacks. For

eight years he suffered with frequent micturition, both day and night. There was little or no discharge. He began suffering at first with pains in his hips and calves of legs; then in his wrists and shoulders. There was no swelling of the joints. He was occasionally troubled with fortuitous seminal discharges, which was followed by impotency.

The prostate was only slightly enlarged, but quite tender, both through the urethra and rectum. He was treated at one time with sounds, but more recently by massage of the prostate. The latter was very painful to him. Four weeks' treatment by means of cataphoresis effected a permanent cure.

Case XIII.—Enlarged Prostatitis, Cystitis, Prostatic Calculi.

A mechanic, aged sixty-two, married. No gonorrheal history. He had never taken a drink of alcoholic liquors nor used tobacco in any form. Up to his fifty-fifth year he was free from any symptoms of disease of the bladder, prostate or kidneys. About that time he began passing urine more frequently than normal and it became noticeable when chilled, or his feet were wet, that it irritated his bladder, which necessitated him to evacuate his bladder more frequently, both day and night. He resorted to the ordinary domestic remedies with temporary relief. Subsequently he began, during paroxysms of dysuria, to pass some blood at the cessation of the flow. The hemorrhage became more marked in time, and was accompanied with pain in region of the perineum and bladder. All symptoms increased in severity, compelling him to seek relief. He then consulted a genito-urinary specialist, who began the use of sounds. This aggravated his symptoms. He next underwent the Bottini cautery operation. This was

followed by some temporary relief, when he relapsed into still worse condition than before the operation, and was confined to his bed for several weeks with some form of fever. On recovering from the fever he came to me for treatment.

He was very much emaciated, anemic, and voiding urine on an average, during the day, of every fifteen minutes, and at night about every forty minutes. He suffered with constant pain in his back. The urine was strongly alkaline and contained a heavy sediment of mucus and pus, of ammoniacal odor, and occasionally tinged with blood.

I began treatment by giving him five grains of cystogen three times daily, and ten minims of normal tincture of hyoscyamus every three hours during the day. Locally, I applied benzoinol to the urethra, and the secondary faradic current, with fifteen thousand ohms resistance, to the prostate through the rectum. He was also given a suppository containing ten grains of boric acid and three-fourths of a grain of extract of belladonna at night. This treatment rendered him much more comfortable, and prolonged the intervals of micturition. At the expiration of two weeks his condition was so much improved that I began the use of cataphoresis through the urethra, and the sinusoidal applications to the gland per rectum. This treatment was continued regularly for two months, with marked improvement.

He returned to work handling heavy machinery, and I did not see him again for three months, when he returned with the same symptoms somewhat aggravated. Treatment was again resumed with variable results: at times there would be much improvement, then he would relapse into his former condition. During all this time, however, he was continuously at work carrying heavy machinery. One day following a treatment of urethral cataphoresis to the

prostate he passed quite a quantity of prostatic concretions, varying in size from a pin point to a mustard seed, as illustrated by Fig. XIII, page 87.

He finally became discouraged with my treatment and sought the advice of another physician.

I did not hear anything further from him, but about one month thereafter I incidentally noticed an account of his death in a hospital as a result of an operation. I never learned the nature or purpose of the operation.

Case XIV.

Was similarly affected to that of the foregoing. He, too, had been operated upon with the Bottini cautery and by the same physician. On the fifth day after the operation he had a violent hemorrhage which lasted several hours, rendering him unconscious and almost pulseless. The hemorrhage was finally controlled after many hours' work by the physician. This patient was treated in similar way to the preceding one, and improved more rapidly. In fact, he was so far relieved of irritation about the bladder and prostate that I thought at one time he would ultimately recover, but he, too, had some operation performed upon his bladder or prostate, and I have never since learned the result.

In these cases there were no indications for the Bottini operation; and I do not hesitate to state that it was made, as I have known of others, in an empirical manner, without reference to the exact diagnosis of the condition of the prostate. The bleeding, as result of the operation, relieved for a time the congested state of the gland, and it, together with long rest in bed, relieved temporarily the inflammation, but at the expense of the irreparable injury to the gland, as denouement of the cut and cicatrix. The only indication where such an operation is at all justifiable is

in those cases where an obstruction forms at the neck of the bladder by way of a firm fibrinous band; or, in other words, where there is a development of the third or middle lobe of the prostate. When the latter condition exists to such an extent as to obstruct the flow of the urine, it may be severed with little danger to life, either directly or indirectly, and especially after the case has been prepared for such an operation by the reduction of acute congestion and inflammation. This treatment will be considered more at length in the succeeding chapter under the treatment of the hypertrophied prostate.

CASE XV. — PROSTATITIS, VESICULITIS, PROSTATIC URETHRITIS, SYMPEXIA, HEMIPARESIS.

Merchant; married; aged fifty-five; gonorrheal history. He had been treated several times by means of sounds, massage of the prostate, internal medication, etc., —the same result.

Examination showed an enlarged and inflamed prostate, perivesiculitis and inflammation of the neck of the bladder. The right leg became impaired and grew gradually worse; then the arm and hand on that side followed after a year's existence of the trouble. There were various shaped lumps of a tenacious character that passed from the urethra, at times following the evacuation of the bladder in the last efforts to expel its contents and again on evacuating the bowels when costive. There was a perverted sexual propensity, often a previous discharge of semen during sexual congress, then again a condition of inertia.

The gland was enlarged and inflamed, the rectal mucosa, around the vesicles, was thickened and unduly red. The prostatic urethra was very tender. The lumpy discharges (sympexia) consisted of mucus, calcareous matter and disintegrated semen.

He was anemic, emaciated, costive and dyspeptic. Cascara was given to relax the bowels. Cataphoresis was given by way of urethra and rectum, through the prostate, after the preliminary course to relieve acute symptoms. Complete recovery followed five months' course of treatment. The lame leg was somewhat sluggish and heavy for a year afterwards, but finally regained its normal condition.

CASE XVI.—ENLARGED PROSTATE, CYSTITIS.

Farmer; aged sixty-one; married. He had gonorrhea in early youth, but recovered from it with little inconvenience. He had little or no trouble until about in his fifty-fifth year, when he noticed the necessity of evacuating the bladder more frequently than natural through the day; and having to arise once or twice during the night. This continued, worse at times, then better, until he began passing some blood with the urine, during the periods of exacerbation. In addition to the enlarged and congested gland the cystoscope revealed some small vegetative growths about the size and shape of the tip of a sharpened pencil. These were touched with a very small quantity of crystal phenic acid, then dried with a piece of absorbent cotton so as not to smear the acid over a large area. Cataphoresis was then used, and recovery followed. The man grew to be quite robust.

CHAPTER VI.

HYPERTROPHY OF THE PROSTATE.

True hypertrophy of the prostate consists chiefly in indurated enlargement, as an outgrowth of the muscular fibers of the gland. The pressure as exerted by this adventitious tissue upon the blood vessels and gland tissue perverts their function, and ultimately induces parenchymatous inflammation of the entire gland. This form of disease is characteristic of old age. It rarely occurs in men under fifty-five, and more frequently after having passed sixty. Sir Henry Thompson places the time of life at which it most frequently occurs at from fifty-five up to seventy, but that it rarely develops after seventy. Dr. Keys places the time of its usual appearance after fifty. It must not be inferred, however, that in all men past fifty-five, who suffer with prostatic disease, it is senile hypertrophy; but on the contrary, more men suffer from congested enlargement, during that period of life, than from a hypertrophic induration of the gland.

While this disease is characteristic of old age, yet exceptional cases occur at a much earlier period of life. It is quite common among physicians to accredit all forms of diseases of the prostate to hypertrophy and place the time of its occurrence anywhere from twenty-one up. In fact many chronic urethral diseases that have proven rebellious to the ordinary methods of treatment have been pronounced hypertrophy. It might be likened to Fothergill's interpretation of rheumatism, which, as he states, "includes the lightning pains of locomotor ataxia to the boring sensations of syphilitic ostitis."

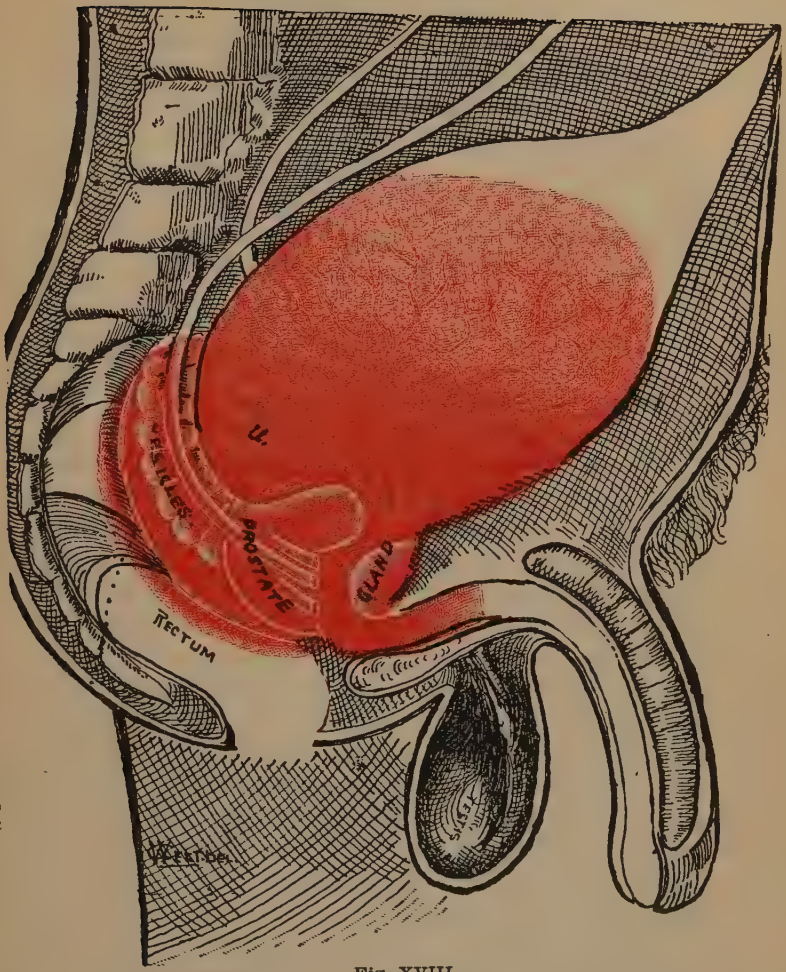

Fig. XVIII.

Fig. XVIII. illustrates a condition of true hypertrophy of the prostate, showing extensive growth of the third lobe, which so encroaches upon the neck of the bladder as to occlude the flow of urine. It also shows an extension of inflammation to the bladder, vesicles and rectum.

Clinical experience has demonstrated that the large majority of men troubled with prostatitis even past fifty do not suffer from hypertrophy of the gland, but of congested enlargement. I have treated and cured many men suffering from the latter, that had been treated for senile hypertrophy and pronounced incurable. Such errors have not been confined to the general practitioner, but many had been treated by some of the leading genito-urinary specialists

CAUSES.

The etiology of the disease has never been definitely determined. Several of the French writers have considered it analogous to the atheromatous condition of blood vessels, heart and other structures of the body, due to old age, and as result of undue accumulation of the earthy salts from the impaired functions of the eliminative organs. The various hypotheses as advanced by different writers upon the subject are wholly speculative. It cannot be due to over use of the organs, congestion, or inflammation of the gland of long standing, though the latter evidently tends in some instances to convert soft infiltration, as a result of such inflammation, into firm fibrinous structure; yet I have known of numerous men who suffered more or less with prostatitis for twenty-five or thirty years, but were free from fibrinous induration of the gland. Dr. Keyes says: "The prostate is analogous to the uterus in the female, in regard to the nature of the muscular tissue, which composes it, and this analogy is further borne out by the tendency of both organs to develop fibrous tumors (so called) after middle life."

The morbific changes that take place are not uniform, as in congested enlargement of the gland, but are usually nodular, or one lobe may be affected, independently of the

other. The muscular band at the neck of the bladder is almost invariably involved, sooner or later, forming a firm bar which serves to obstruct the flow of urine. This often marks the chief subjective factor in the first stage of the disease. Later this bar may develop to such an extent as to cause retention of a part of the urine, which undergoes decomposition, inducing thereby local irritation of the bladder, tendency to the development of calculi, or sepsis. Subsequently as the induration increases, it presses upon the vessels and gland structure until congestive inflammation supervenes.

The abundant anastomosis of the veins of the prostate and bladder, with those of the hemorrhoidal, causes venous stasis in the rectal mucosa resulting in the formation of tumors, or an abraded mucous surface within the rectum.

SYMPTOMS.

The symptoms must necessarily vary with the extent of the disease, and most of them are similar to those of congested enlargement of the gland as heretofore described. The enlarged gland generally presses upon the rectum and interferes with the free evacuation of the bowels, causing constipation, and often flattening of the fecal matter, as it passes the obstruction. It is also somewhat difficult to start the flow of urine, at times, or even to thoroughly evacuate the bladder. The residual urine may dribble away, even after cessation of the flow, onto the clothing, to the great annoyance of the man.

Pressure upon the nerves of the prostatic, hypogastric and sacral plexuses provokes various reflex disturbances. Prominent among these are pains in the back, hips and limbs, disturbance of the stomach, which is a very common sequel of any form of prostatic disease.

The bladder often becomes largely distended, from an

over-accumulation of urine, impairing the detrusor urinae to the extent that they are unable to expel all the urine. This residuum increases as the disease progresses, and becomes offensive from the decomposition of mucus and urea. Bacteria develop in large quantity and the patient is in constant danger of septic poison. Sepsis is especially liable to a catheter habit, inasmuch as the microbic flora, always present about the meatus or fossa navicularis, are carried by the catheter into the bladder where conditions are favorable for their development and engendering of septic poison, as clinical investigation has proven, that it has been impossible to maintain an antiseptic urethra.

The catheter life of a patient has been estimated at an average of from four to five years. Sir Reginald Harrison gives this as the average time. There are exceptional cases on record, where men have lived fifteen or twenty years using the catheter several times during the twenty-four hours.

DIAGNOSIS.

The disease, for which hyperthrophied prostate is most likely to be mistaken, is congested enlargement of the gland, as before described; and, it is not easy, in many instances, to differentiate between them, since each occurs during the same period of life, and many of the subjective symptoms and complications are concomitant.

In the early stage of hypertrophy the diagnosis may easily be made. In this the gland is much less sensitive, unless it has been subject to harsh treatment by sounds, caustic applications or other procedures, when acute inflammation may have been the result thereof instead of the disease, *per se*.

In extreme old age, where the disease had been of long standing, or complicated with cystitis, vesiculitis or rectal lesions, it becomes somewhat difficult to differentiate

between the two conditions. The points upon which I rely, after taking age into consideration, are (a) the length of time of the noticeable existence of the trouble; (b) the presence or not of a urethral discharge and its character; (c) the general contour of the gland as determined through rectal examination; (d) the condition of the prostatic urethra and bladder.

In view of the first consideration, should the patient be under fifty-five years of age, the indications would favor congested enlargement, rather than indurated hypertrophy. Should the patient, on the other hand, be over fifty-five and the trouble had been noticeable prior to fifty, it would also be a negative point to hypertrophy. The long standing existence of a urethral discharge, whether perpetual or intermittent, favors congested enlargement. Microscopical examination revealing latent gonococci or Bottcher's crystals indicates the latter.

In hypertrophic conditions of the gland it appears firm and unsymmetrical to digital examination, through the rectum. It may be nodular from the presence of tumors in one or both lobes. Both lobes of the gland are rarely of the same size and consistency, and there is little or no tenderness upon pressure, unless inflammation has extended to the gland from complications of the bladder or rectum, or the extreme size of the organ has obstructed the flow of urine and caused a congested inflammatory state of its glandular structure and bladder. When such condition exists, there is often a profuse discharge both from the gland and vesicles.

In enlargement from chronic congestion the lobes of the prostate are uniform in size, less firm, unless it is very much swollen and the capsule is subjected to extreme tension. It is also tender upon pressure; the tenderness extending to the gland penis or perineum.

The bladder in the hypertrophied state, and advanced stage of the disease, becomes sacculated as result of some of the detrusor urinae becoming partially paralyzed from over distension. In these sacs calcareous matter is often deposited, forming at times stones of such size as to be detected easily by the cystoscope, when not covered by folds of the muscular walls of the bladder. In the majority of instances, where calculi have become imbedded within these sacs, distension of the walls of the bladder by air reveals them through the cystoscope.

Another valuable diagnostic point is that the prostatic urethra is almost invariably elongated. It is somewhat difficult to describe just how to determine the elongation.

One familiar with urethral instrumentation can detect the passage of the triangular ligament and membranous urethra, and the entrance of the prostatic portion of the canal, and, therefore, the distance traversed by the instrument before reaching the bladder.

The differential diagnosis with reference to these two diseases of the gland are very important, inasmuch as one condition is curable and the other is not, and the curable one is so often mistaken for the other, and the patient subjected to dangerous and useless operations, that are irreparable.

TREATMENT.

Hypertrophic prostatic diseases, owing to their intractability, have been made, by the ambitious surgeon, the object of many operative procedures, each of which challenges its predecessor in the endless suffering entailed upon its victims, or in its lethal dangers supplying topic for lengthy discourses upon the superior claims of each operation as revealed by the *autopsy*.

Before proceeding to describe my method of treatment in cases of senile hypertrophy, I shall briefly refer to

some aspects of the surgical operations by which a radical cure of the disease is attempted.

The prevalence of the disease has offered a tempting field for the exploitation of surgical ingenuity and the innumerable methods proposed; those of Tobin, Mercier, Bottini, Harrison, Dittell, McGill, Belfield, Treves, Whitehead, Dolbean and others, have one and all found enthusiastic followers and formed the subject of our medical literature upon this subject.

Surgical operations for the relief of urinary troubles resulting from enlargement of the prostate fall into two classes. The first consists of the various methods by which the gland is attacked directly; the second embraces the procedures that aim at reduction of the blood supply of the swollen organ and consequently atrophy thereof.

The direct interference of the diseased organ is effected through the urethra (as in the Bottini operation), or by the perineal route (so-called lateral prostatectomy), or by means of suprapubic incision. By the latter method, the gland, especially the middle lobe, is removed bit by bit with the rongeur forceps, or a wedge is cut out with scissors, or the organ is destroyed with Paquelin's cautery or the galvano-cautery. Prostatectomy by combination of suprapubic and perineal methods has also its followers.

The operations undertaken for the purpose of reducing the blood supply of the gland and so bringing about an atrophied condition, are either direct or indirect in character. The direct consists in ligating the arteries which feed the prostate, i. e., simultaneous ligation of both internal iliac arteries. The indirect method is orchidectomy. The theory on which this procedure is based being, that the hyperemic condition of the genital system is produced by nervous reflex through the presence and secretions of the testicles.

This multiplicity of surgical methods of dealing with the hypertrophied prostate has its parallel in the variety of theories that have been propounded as to the cause of the disease, as, for instance, that of Guyon, who regards it as simply a part of the constitutional condition peculiar to old age and characterized by arterial sclerosis; or that of Harrison, who regards the growth as compensatory in character and secondary to certain bladder changes. Others believe that prolonged, ungratified sexual excitement causes enlargement of the prostate. But here we are met with the difficulty of distinguishing cause from effect, for there is plenty of evidence to show that the enlarged prostate is a cause of abnormal sexual excitability, in some cases, while in the majority it has the opposite, of causing impairment or total impotency. Therefore it is clear that cause and effect may be transposed. In general it may be said that nothing whatever has been demonstrated as to the real cause of senile hypertrophy.

Each and every one of the surgical methods to which I have referred is open to the most serious objections. It must be remembered that the patients upon whom they are practiced are generally very much reduced in health, that the surgical operation is of a particularly painful nature, and that the results have been either utterly unsatisfactory or at least equivocal.

On account of the celebrity of Bottini's operation and to show the dangers which lurk in it, I will here say a word or two regarding it. Enrico Bottini's galvano-cautery radical operation for hypertrophy of the prostate was first performed in 1875. The instrument as used was catheter-shaped, of medium caliber with short beak carrying a platinum plate ($\frac{3}{4}$ inch in length) on a porcelain disc. The plate, rendered red-hot by electric current, was used to cauterize the prostate. In a short time this cauterizer

was discarded for a prostatic incisor, the instrument consisting of a male and female arm. A platinum knife ($\frac{5}{8}$ inch long) in the male arm leaves the female arm on working an outside screw, and a cooling mechanism prevents burning of the parts by any other portion of the instrument than the knife. The incisor removes the mechanical obstruction to the outflow of the urine by slowly burning a groove or grooves through the enlarged prostate. Considerable modification of this instrument was effected by Freudenberg, who made the knife of an alloy of platinum and iridium, increasing thereby its hardness and power of resistance.

The technique of the operation is of the most delicate nature, involving the length, direction and number of cuts to be made, the rapidity with which they ought to be made and the amount of current necessary for heating the knife. Besides all this there is the danger of the knife's bending sideways and the difficulty of removing it without the consequent pain and hemorrhage. It is obvious, therefore, that even if the operation had proved effective and free from dangerous consequences, it would, from its attendant difficulties, be absolutely lethal in its nature save in the hands of the most skillful and experienced electro-surgeon.

But even where all the details of the operation are perfectly understood, where the utmost care and skill are brought to bear upon it, where there is clear knowledge on the part of the operator of the exact conditions existing in the bladder neck, the dangers are too numerous to allow of anything but a theoretic interest in the Bottini cautery. Among the dangers that attend its employment are: absolute retention of urine, hemorrhage which is apt to occur from five to ten days after the incision when the sloughs are thrown off, perforation of the urethra, drib-

bling and sepsis. The latter risk forms the most serious objection to the Bottini method. Infection may take place not only through the wounds of the prostate, but also through the kidneys. Soluble and insoluble matter ascends from the bladder through the ureters to the pelvis of the kidney, enters the lymphatic veins and uriniferous tubules and is hence conveyed to the right ventricle. The foreign substance is then carried by the current of blood into the other organs, principally the lungs and liver. The risk of sepsis may be imagined when it is remembered that cystitis, or the conditions preliminary to its development, are present in every case of enlarged prostate. Numerous pathological changes are present in the bladder lining as well as in the prostate gland and adjoining organs, and a wound caused by the Bottini instrument is all that is necessary to produce serious inflammatory conditions.

Even such an enthusiastic advocate of this operation as Dr. Willy Meyer admits that the dangers attending it are real and numerous and closes a discussion of them with the following significant remark: "At present, it would seem, we are justified in stating that the larger the prostate, the greater its blood supply, especially the more enlarged its venous plexuses, the more pronounced the purulent catarrh of the prostatic urethra as well as of the bladder and even of the pelvis of the kidney—the more dangerous is the operation."

The Bottini operation might be justifiable in some instances were it true, as the operation purports, that the disease is confined to the indurated bar at the neck of the bladder. But such is not the fact and on the contrary the lateral lobes also present pathological changes. Should the patient even survive the operation it practically precludes any other treatment for radical relief, except prostatectomy, when it would be extremely rare to survive two operations.

Regarding the other surgical methods above referred to but little need be said here. Prostatectomy, whether by the suprapubic or perineal route, or by combination of these methods, is always accompanied by the danger of sepsis, hypostasis, and above all of uremia. This operation has become quite popular of late years.

I fully concur in the opinion expressed by Dr. Orville Horwitz, as published in the *Medical Times* of August, 1901. In summarizing the results of one hundred and sixty-one operations for the relief of senile hypertrophy of the prostate, he says: "With the exception of ligation of the internal iliac arteries, prostatectomy is the most dangerous of any operation that has been recommended for the relief of prostatic obstruction, due to hypertrophy." Orchidectomy, objectionable on real as well as sentimental grounds, is doubtful in its results. Only a few years ago, when the operation was enthusiastically advocated by Dr. J. Wm. White, it was quite frequently performed. Now, like others that have their day, it is very rare. In three cases upon whom I have noted the operation they have suffered intensely from hysteria, melancholia and various other reflex nervous conditions. Ligation of the iliac arteries is spoken of with hesitancy by those who have performed it. Of three cases reported by Meyer, he says that one was partially improved, one was not improved at all and one died. Suprapubic drainage (which is recommended by Sir H. Thompson) is distressing to the patient and wholly unsatisfactory, for not only is the wearing of a urinal a source of constant annoyance, but no device that has been tried can prevent leakage, while there is a standing danger of infection through the constantly open communication with the air.

THE AUTHOR'S METHOD OF TREATMENT.

Having reviewed the pathology, complications, and obstinacy of this most formidable disease, also the operations that have been devised for its relief, I shall give an outline of the methods I have found most effective, (a) for impending dangers to life, (b) to mollify distressing symptoms, (c) in removing the morbid products of the gland, without jeopardizing the life of the patient.

There are many symptoms and conditions of this disease, that are common to congested enlargement of the gland, which require similar treatment. The methods advised for the relief of acute complications are especially indicated in hypertrophy. Individual cases, however, necessarily require special treatment, to meet indication that arise at different stages of the disease. One of the most difficult problems to combat, in connection with hypertrophy, is the impediment to the flow of urine; which engenders most of the dangerous sequels of the disease; and, unfortunately, the patient defers seeking relief until some serious or distressing symptoms prompt him. This is generally followed by the indiscriminate use of the catheter, and is often repeated from day to day until prostatic urethritis, and cystitis, is provoked, and paresis of the detrusor urinæ results. The latter condition makes the bladder so dependent upon the catheter as to render it difficult to overcome the habit even when the cause of obstruction is removed.

The first indications for treatment is to relieve, in so far as possible, all acute symptoms. As this method of treatment has been fully described in the preceding chapter, I shall deem it unnecessary to repeat here. As the acute symptoms begin to subside the calls to evacuate the bladder will become less frequent, and the necessity for the use of the catheter will correspondingly be diminished.

It is impossible to prevent a condition of urethritis, just so long as a catheter must be passed over an inflamed surface for the purpose of the evacuation of the bladder. The oftener it is passed the more trouble it provokes. I do not wish it understood, however, that I advise the dispensing with the catheter altogether, as it is required, at times, for the over-accumulation of urine. The bladder should be encouraged to expel its contents whenever it can be accomplished without much effort or straining. As the acute symptoms are relieved the normal evacuation of the bladder becomes more easy. When the catheter habit has been established, the bladder becomes sacculated and the detrusors in state of inertia. It is not wise to defer the use of the catheter too long; it is also better not to permit the bladder to become too much distended, as it serves to impair its muscular walls. When the bladder is very much distended, from the accumulation of a large quantity of urine, it should never be entirely evacuated at one time, as it is liable to cause shock that might prove fatal.

In the early stage of hypertrophy, where the urine is not wholly retained, but somewhat impeded in its flow, and the prostatic urethra has not been rendered acutely sensitive from congestion or instrumentation, I begin the use of cataphoresis both through the urethra and rectum. The effect of the current alone revives the lethargic condition and softens the indurated tissues. The medicines as used in connection therewith aid in the reduction of the existing inflammation and decomposing the abnormal products, that form as result of unnatural growth of the parts.

After having allayed the acute symptoms, I "hammer" at the prostate both through the rectum and urethra until the indurated tissue begins to soften, then atrophy. It

takes quite a long time in some cases, where the gland has become quite large, complications of the bladder and rectum exist, and the health of the patient impaired. In some cases from six to twelve months of treatment is necessary to reduce the gland to that extent where the urine can be voided without the use of the catheter. I do not advise continuance of treatment uninterruptedly during all this time,—I generally advise constant treatment for six weeks or two months after the subsidence of the acute symptoms, then the patient is instructed to wait one or two months when it is again resumed. The amount of reduction of the gland thus effected is permanent.

There are certain pathologic changes that take place in the bladder walls as a denouement of the obstructed flow of urine, which, in some instances, cause paresis of a part of its muscular fibers that form sacs, which retain a certain amount of residual urine. In other instances, from long and continued use of the catheter, atrophic degeneration of the muscular coats of the bladder occurs that so impairs its force as to render it useless for the expulsion of the urine. Whenever such conditions of the bladder exist, fermentation of the residual urine is inevitable, which results in the development of pyogenic bacteria and ammonuria. When this trouble of the bladder is due to impaired function, it can be relieved by applications of the sinusoidal or primary faradic currents, which restore its tonicity, and enables it to expel its contents. But, when it once becomes sacculated, it can never be entirely restored.

In the majority of cases of true hypertrophy the bar at the neck of the bladder, or the so-called third lobe of the prostate, is the chief offensive factor. This muscular band is, usually, the first to become indurated and enlarged,

and, owing to its position, it serves as the most effective barrier to the outflow of urine, by mechanically obstructing its exit. This condition exists, frequently at its inception, without tenderness or any inflammatory symptoms. Fig. 17 illustrates this condition.

Fig. XIX. (Coulson.)
Showing enlarged prostate with "third lobe," through the base of which a false passage has been made.

The Bottini operation was devised, more than a quarter of a century ago, for the special relief of this trouble. The operation, as originally purported, properly used, and, with strict reference to this pathologic condition, was scientific and gave much temporary relief. But, like most all valuable procedures, it has been greatly abused, by

blind and indiscriminate use, for almost every inconceivable disease of the prostate without, in many instances, the first semblance of diagnosis. I have seen several men upon whom the operation had been performed where unmistakable evidence of a congested enlargement of the gland existed instead of indurated hypertrophy.

The objections to the Bottini operation are that it gives only temporary relief, even when properly used, and the condition of the gland correctly diagnosed. This bar, as before stated, is usually devoid of acute sensitiveness; but the cicatricial tissue following the operation is always exceedingly tender and inflamed. It also favors development of vegetative and polypoid growths. Some of these form quite large tumors, which evidently result from lesion by the Bottini operation. The cut by the cautery, at the entrance of the bladder, is constantly bothered by septic urine, on account of its gravitating to this point. The injury once performed is irreparable. The same may be said of all other operations upon the gland; but there are some instances where neglect of timely treatment necessitates an operation for the relief of impending danger to life.

I do not wish to be understood as taking the stand against all operations, as there are some few that are imperative, and I advise them; but the tendency of the day is too much in favor of indiscriminate cutting, without reference to correct diagnosis. Delay of treatment is often responsible for serious pathologic conditions necessitating the use of the knife; but, as expressed by the venerable Jacobi: "The knife takes too often the place of brains."

In regard to the Bottini operation I shall quote Dr. Joseph B. Bissell, in *Medical Record* of November 10, 1900. He writes: "Bottini's operation does not adequate-

ly appreciate the cause of the obstruction. It does not treat the condition complicating the hypertrophy. It does not allow for drainage of a dirty wound. In a word it is unscientific and unsurgical. Bottini reported five successful cases in two years with this instrument. Later he modified it, so that at present it resembles a lithotrite, in having a male and female blade. In the former is a platinum knife, which leaves and returns to the groove of the female blade by the turning of a screw, and is connected to an electric current. A scale at the outer extremity shows the depth of groove cut. A cooling apparatus surrounds the instrument so that it is kept free from heat while the knife is raised to a white heat. Freudenberg modified the instrument by making the blade of iridium alloy, rendering it firmer and less difficult to heat, and also in various other ways changed it greatly to its advantage." He further says: "Dr. Willy Meyer, to whose writings on this procedure I am indebted, has carried out almost to perfection the methods and manner of using this instrument. He prefers the street current with a rheostat, but a fifty ampere storage battery can be taken to the patient's house, if necessary. Dr. Meyer's personal cases, twenty-four in number, show eight per cent mortality directly due to the operation, with thirty-eight per cent of cures."

The Bottini operation is not so simple or easy as, at first sight, one would expect. It is an operation of detail, and one which requires care and skill and an intimate and clear knowledge of the exact condition of affairs in the bladder neck. It is an operation by no means devoid of danger. Death, following suppression of urine immediately succeeding this procedure, has occurred several times to my personal knowledge. Freudenberg reports a case in which he cut through a fold at the base of

the bladder; sepsis and death resulted. Perforation of the urethra and sepsis are reported. Pulmonary emboli have been found at autopsies. Hemorrhage is a constant danger, and all the greater, in that it comes on at the time the sloughs are thrown off, about five or ten days after the incision. It may take place earlier. Cystotomy and tamponing have been necessary in a number of cases, in order to save the patient's life. Absolute retention is not an infrequent immediate result of the operation. In one of Meyer's cases he was obliged, for this cause, to tap the bladder over the pubes for three days. Pain and severe tenesmus, almost unbearable, are not infrequent complications. Dribbling is an occasional sequel which may be permanent. But the most serious of all the objections to Bottini's method is the risk of sepsis. In every case of enlarged prostate which comes to us for treatment there is already a cystitis, or all the elements preparatory to its development. There are present a number of pathological changes in the mucus and other coats of the bladder as well as the tissues of the prostate gland and its adnexa. A trauma, such as is done by the Bottini instrument, is all that is needed to light up an inflammation in these tissues. The destruction of a considerable amount of tissue in a closed sac, and leaving it there without a drainage, seems to me to be a surgical negligence without any excuse. To say that it is done with every antiseptic precaution is saying what is impossible. The cicatrization produced by Bottini is said to prevent or complicate seriously any further radical operation upon the gland. Moreover, this procedure does not take into account the real cause of the obstruction and its sequences, or at least affects only a small proportion of them. If the retention, cystitis, and their results were caused by a bar or a collar or other obstruction at the lower portion of the vesical opening

only, the Bottini apparently would be the indicated operation always, provided free drainage afterward could be instituted to prevent septic infection. A catheter tied into the urethra, to my mind, is a brutal and painful relic of the dark ages of genito-urinary surgery. Most of the cases which have come under my observation, that had been operated upon by the Bottini method, have been complete failures; in all of these, however, with the exception of one case, the operation has been contraindicated. One of these cases, I can recall, was reported at a meeting of a medical society as a remarkable cure, when in less than a week thereafter, I noticed his name in the death list, followed by "uremic poison."

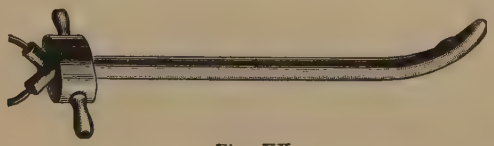

Fig. XX.

Fig. XX. illustrates an instrument devised by the author for relieving this indurated enlargement at the neck of the bladder. It is similarly constructed to that of the Bottini instrument, except that the cauterizing part is flat instead of a blade. It is not intended to cut, but sear the indurated surface, as illustrated. This operation is attended with practically no danger, and converts the hard resilient tissue into a soft granular surface, that admits the action of cataphoresis, and atrophy of the obstruction, without danger to life. In fact, it seldom requires confinement of the patient to his room more than one day. Many never discontinue work more than an hour or two, but I always advise at least a day's rest.

Fig. XXI. shows the application of the cautery to the indurated third lobe.

The technique of this operation is first to produce localized anesthesia of the prostatic urethra. This is accomplished by applying, with instrument shown in Fig. IX,

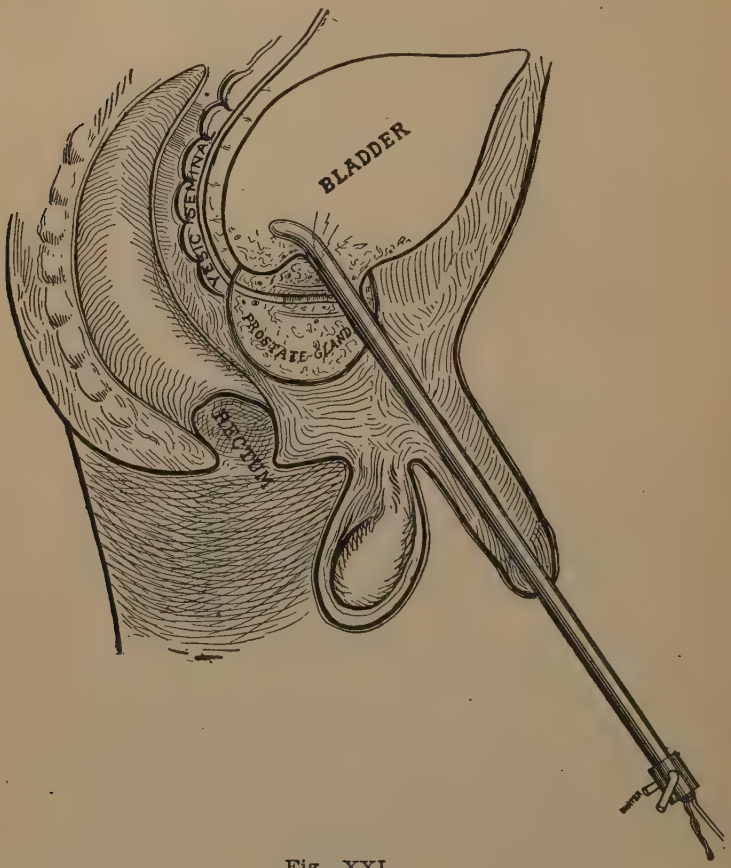

Fig. XXI.

a twenty per cent solution of cocaine; to intensify the localized action of the cocaine I use anodal cataphoresis. I then wait ten minutes for the action of the anesthetic. The cautery should always be tested before its introduction

into the urethra, in order to note carefully the required amperage and to see that the apparatus is in perfect working order. The cautery surface should be of deep red color and never at a white heat. It is held in apposition to the enlarged bar, at first, only one or two minutes. The patient should be retained in a recumbent posture for at least one hour, and, better still, two or three hours after the operation. The bladder should always be evacuated prior to the operation, and a soft catheter passed to see that it is thoroughly emptied. The urine should be maintained in an antiseptic condition, and if of alkaline reaction, benz-ol cps or cystogen should be given. Thuja is especially soothing to the genito-urinary tract in some cases, and can be administered in combination with potassium citrate with much relief when the urine is unduly acid. The cautery application can be repeated within a week or ten days. Cystoscopic examination of the gland should be made to note its condition just before the cautery is applied.

After the second or third cautery application cataphoresis through the prostatic urethra should be instituted about every second or third day by means of a one per cent solution of thuja or aqueous extract of hydrastin. These treatments should be given very mildly at first and discontinued if attended with much pain or hemorrhage. In many cases a copious muco-purulent discharge follows the cautery application, as a result of the disintegrated enlargement. If such discharge becomes very profuse or irritating to the urethra, an injection of two grains to the ounce of sulphocarbolate of zinc should be used.

Softening and atrophy of the gland becomes quite noticeable in from one to two months, and the urine is voided more easily, less frequently and becomes free from the heavy muco-purulent sediment.

After the second month I usually discontinue all treatment for a certain length of time, varying from three weeks to two months. By this means the natural restorative processes are favored, after discontinuance of the irritation provoked by the treatment.

The majority of men who suffer from hypertrophy of the third lobe require treatment as heretofore described, for at least a year, when the gland becomes reduced to such an extent as to render them comfortable the remainder of their lives. Others require treatment occasionally, every one, two, or three years; and only for a short period at a time. This treatment gives them an option on living many years in comfort, rather than endure the suffering entailed by the obstructed flow of urine, or the dangers directly attending the knife, or its subsequent effects.

There are many cases of hypertrophy, where a vegetative or polypoid growth springs from the posterior part of the middle or third lobe at the neck of the bladder, and, floating in the urine, serves as a valve to impede its free exit. Such conditions are especially suitable for this operation. The instrument is passed well into the bladder and towards the front surface; it is then reversed and brought backwards and forwards, when the concave surface (containing the cautery) engages the tumor. It is held in contact with the tumor about one and one-half to two minutes. The patient should remain in bed for some days after the operation.

Case XVII.

A lawyer; aged sixty-eight; married; no venereal history. He had observed some slight difficulty in voiding urine for about five years. There was no pain attending the act, but it required longer time than normal, and some effort to thoroughly evacuate the bladder. This condition

gradually became more manifest, until he observed that he could not entirely empty the bladder. He then consulted his physician, who began the use of sounds, and the catheter. The urine became turbid, ammoniacal and very offensive after standing. Washing of the bladder was resorted to, without any relief.

When he consulted me he had to use the catheter from four to five times during the twenty-four hours. He was enabled to expel by force, at times, from one to four drachms. It contained a large quantity of mucus and pus, strongly ammoniacal in odor, and alkaline in reaction.

Both lobes were hypertrophied — the left one more marked. The bar at the neck of the bladder was especially large, and firm. There was no tenderness upon pressure of the gland through the rectum. Its large size obstructed the fecal discharge, causing constipation. There was very slight tenderness in the prostatic urethra, notwithstanding the long use of the catheter.

I began the use of cataphoresis with one per cent solution of thuja through the prostatic urethra on alternate days. The sinusoidal application was made to the gland, through the rectum, the intervening day, making therefore daily treatments to the indurated prostate. The thuja was gradually increased to ten per cent strength. Five and ten per cent solutions of potassium iodide were also used. I had him discontinue washing the bladder. Five-grain doses of cystogen were given three times daily. The use of the catheter was continued as required to evacuate the bladder. At the end of the first month's treatment, it was necessary to use the catheter on an average of every second day. At times he would not use it oftener than the third or fourth day, then again daily for a few times. The urine remained normally acid without the use of

medicine and had become much less offensive, and the sediment reduced to one-fifth the quantity it formally contained.

This condition continued, with some interruptions, for four months. He would occasionally go two weeks without using the catheter, then again having to use it daily for a few days. His general health was much improved, having gained fifteen pounds in weight. The treatment was discontinued for a month, and again resumed, and continued two months longer, when he returned home. The first letter I received from him, a month thereafter, he was somewhat discouraged. I will quote his second letter, which followed about a month later:

"Dear Doctor: Since I wrote you, I have improved in health, and seem to be almost well. The day after I wrote my last letter, the improvement commenced in a marked degree, and the gain has been steady and well sustained. I have gained in weight and strength. My digestion is good and my bowels are working in a natural way. There is no heavy or thick sediment in my urine and no pain in the bladder."

I have not heard from him since.

Case XVIII.

Hypertrophy of prostate, cystitis, proctitis. Physician, aged sixty-nine; married; had gonorrhea in early manhood, from which he readily recovered. He had ridden horse-back a great deal up to his sixty-fifth year, without discomfort. About that time he began to feel an uneasiness in the region of the perineum. The flow of urine had also become sluggish, and somewhat difficult to start. He abandoned the saddle for a buggy, when he soon found it necessary to use a pneumatic rubber ring for a seat, and to empty the bladder with catheter. The catheter had

been in use for more than a year when I first saw him. His general health was very much impaired.

Upon examination I found the left lobe very much enlarged, the right less so, but quite nodular. There was very slight pain upon pressure of the gland. The adjacent tissues were somewhat congested and tender, from obstructed venous circulation. The muscular bar at the neck of the bladder was very large and firm.

Failing to procure much relief by means of cataphoresis, I restorted to cauterizing the bar at the neck of the bladder, with my modified Bottini instrument (Fig. XX). This was accomplished by placing the patient in the lithotomy position, with the knees drawn back, and the limbs held in position by means of leg rests. The hypertrophied bar was thoroughly cocainized, using a twenty per cent solution, with instrument (Fig. IX.) prior to the operation. The cautery band of the instrument was tested, before its introduction, and only carried to a deep red heat, not white. It was moved slightly to each side of the indurated bar in order to act upon a large surface. It was allowed to remain two minutes, when the circuit was broken and the instrument removed.

The patient was kept upon his back for some hours, to prevent the urine from gravitating to the cauterized surface, and twenty minims of deodorized tincture of opium were administered. There was no hemorrhage following the operation, and very little pain. Elixir lithamine was given for the purpose of maintaining the urine in an antiseptic condition.

The catheter was used as often as required to evacuate the bladder. The bowels were maintained in a lax condition. The patient was permitted to go out on the third day. One week after the operation cataphoresis was instituted alternate days for two weeks. The patient then

passed from half to one and one-half ounce of urine at times. The catheter was used from two to three times a day. Cauterization was again used in the same manner, three weeks after the first treatment, followed by cataphoresis. Improvement in general health was very marked. The urine at times would flow quite freely for two or three days, then become sluggish, requiring the catheter. At the end of four months he returned home. I have heard from him several times since. He writes that he is comparatively comfortable, and uses the catheter on an average every thirty-six hours; occasionally he goes two or three days without using it, then again once daily.

Case XIX.

Married, aged sixty-three; obstinate flow of urine had begun two years previous; prostatic urethra was very tender. Frequent use of catheter caused daily hemorrhage. Urine, heavily laden with pus and mucus, was very offensive upon standing.

The first cauterization gave great relief, and checked the hemorrhage very materially. After the second treatment there was only a trace of blood. The case was treated similarly to the preceding one for five months, when he was able to dispense with the catheter altogether. I still use cataphoresis once or twice a month. The urine is normal some days; at other times somewhat cloudy.

Case XX.

Widower, aged seventy-one; very sallow complexion and emaciated. He had been troubled with evacuating the bladder for at least ten years. He had been a very active business man, though of sedentary character. The disease developed very slowly. He had led a catheter life for three

years. During the first year he only used the instrument about once every second or third day, then daily, and, finally, four to eight times in the twenty-four hours.

He was very costive, dyspeptic and anemic. At times there was only a trace of blood following the use of the catheter. The urethra was not sensitive. Rectal and urethral treatment were applied regularly for three weeks with the view of restoring tonicity to the organs. Nutritive tonics and massage were also given at the same time.

Six cautery applications were made during the period of seven months, cataphoresis was used between these treatments during the interim. At the expiration of that time he had gained twenty pounds in weight; his mental vigor was restored, and he could void urine during the day without the use of the catheter, but at night was necessitated to draw it once and occasionally twice

Case XXI.

Aged seventy; married. For about seven years he had been periodically annoyed with his "kidneys and bladder," as he expressed it. At first he was troubled only about every four or five months, the attacks lasting two or three days, but not hindering him from his business. The paroxysms continued to become more frequent until he consulted his physician. He suffered excruciating pain and vesical tenesmus, and the physician resorted to the use of morphia for its relief. These paroxysms had recurred so often that the patient had become addicted to the use of the opiate. When sent to me by his physician he was taking from two to three grains of morphia daily and was using the catheter every twenty to thirty minutes when not under the influence of the drug.

I placed him in a hospital so as to obtain the best care, gradually cut down the amount of morphia each day, sub-

stituting the following prescription for its sedative properties:

R. Fluid ext. hyoscyamus .....one ounce.
Opium deod. tr. .....two drams.
Triticum repens, q. s. .....four ounces.
M. Sig.—Teaspoonful in water every two or three hours.

When the local irritation in the prostate and bladder had somewhat subsided I used the cautery instrument as in the preceding case.

I kept the patient at a hospital for a month, during which time the use of morphia had been completely abolished, and the use of the catheter had been reduced to once, occasionally twice, in the twenty-four hours. His general health had so much improved that he removed to a hotel, but still had an attendant. He showed marked improvement from that time on; using the catheter less frequently and having little or no pain.

Upon calling to see him one morning, I found he had a high fever, severe vesicle tenesmus and paroxysmal pain every few minutes, his condition being much worse than at any previous time. The reverse in his condition was the result of his attendant deserting him to attend a ball the night before; the weather was exceedingly cold, the fire had completely gone out, and the patient was forced to get up into the cold room to use his catheter, becoming thoroughly chilled through, and the fever followed. The condition increased in severity, ending in the patient's death on the third day.

The majority of cases of hypertrophy of the prostate that have come under my observation have been so amenable to cataphoresis and local applications as not to necessitate the electric cautery. It is only in those cases where the bar at the neck of the bladder has become so large as to obstruct the flow of urine, that it has been necessary to use the cautery.

There are other cases, of rare existence, however, where a pedunculated tumor forms from the posterior border of the prostate and protrudes into the bladder, in which the electric cautery is especially indicated.

Many cases, too, are presented where vegetative or polypoid growths occur around the vesical neck, demonstrable by means of the cystoscope, which yield readily to local applications, and that do not require electro-cautery. I could continue to report numerous cases with various complications in this connection, but deem it unnecessary to prolong the list.

SYPHILITIC PROSTATITIS.

Little mention has been made by authors of syphilitic prostatitis. I, too, had overlooked it as a prominent etiological factor of prostatitis until two very characteristic cases had come under my observation. There is no reason, to my mind, why the prostate should not become subject to the influence of constitutional syphilis as well as the testicles. All cases of syphilitic prostatitis that I have noted have resulted from the tertiary form of the disease.

Case XXII.

Aged forty-four; single; sailor. He had had several attacks of gonorrhea, the first at about twenty. At about thirty he had syphilis. He had no recollection of secondary symptoms. He took constitutional treatment for only about six months, and even then not regularly.

There were blotches upon the lower and outer portion of his shin bone, simulating syphilides. His rectum was badly ulcerated, extending about three inches from the anus. The prostatic urethra was excessively tender. In fact, he had most of the symptoms attendant upon chronic enlarged prostatitis.

I teated him by the usual methods for prostatitis, rectal ulceration and vesiculitis, ignoring the syphilitic history of the case. He improved readily for six weeks under the local treatment, and then remained about the same for two weeks without further improvement. I then discontinued all treatment for two weeks, when he returned, suffering with syphilitic orchitis. There was no pain in the testicle, nor did it exhibit any inflammatory symptoms. There were no indications of its swelling during the time he was under treatment by the urethra, nor were there any acute symptoms of the prostate or bladder. He was advised to apply lotions of hamamelis, alternating with acetate of lead, and report at the end of the week. By this time the testicle had become quite large, but not the least tender. He also began complaining of pains in his lower limbs. I now placed him upon potassium iodide constitutionally and applied ten per cent strength of oleate of mercury locally to the scrotum. This treatment was continued regularly for a month, when the pains had subsided in the limbs and the testicle was much reduced in size; besides, the local irritation of the prostate was much ameliorated. The same or similar constitutional treatment was continued at regular intervals for two years, which controlled prostatic irritation better than anything else. A second case, very similar to the foregoing, except that the tertiary symptims were more marked in the outset, yielded in like manner and was kept under control by constitutional treatment alone, after the local trouble had been relieved.

TUBERCULOSIS OF THE PROSTATE.

Of all diseases of the genito-urinary organs, it requires greater elasticity of the imaginative faculties to diagnose this form of disease of the gland than that of any other organ of the body; yet there are writers who describe ac-

curately the tubercular nodules as detected by examination through the rectum. Of late I have come to look upon it only as a loop-hole through which to escape the responsibility of failure to relieve an intractable case of chronic prostatitis by the means usually in vogue—namely, the sound, cautery, massage.

The diseased prostate, as much or more than any other organ of the body, often provokes mental and physical depression, which results in emaciation, a hacking cough, and prepares favorable soil for the development and propagation of pulmonary tuberculosis. Many of such cases have come under my care that have yielded readily to treatment of the gland, and restoration to perfect health.

ASPERMATISM.

This is a peculiar and rare condition, in which there is a competent erection, and, at times, a slight orgasm, without ejection of semen. Taylor says: "Lesion of the prostate being so often the cause of aspermatism, I always advise an examination of the gland through the rectum." He claims also that aspermatism is caused by the ejaculatory ducts becoming plugged up by sympexia, preventing thereby the escape of the semen into the urethra. He mentions a typical case, as reported by Beliquet, where relief followed the escape of a large quantity of sympexia through the urethra. Occlusion of the ejaculatory ducts by prostatic calculi have been reported by different authors.

I have observed two cases of aspermatism following chronic prostatitis, one of which was of especial interest owing to some novel symptoms connected therewith.

Case XXIII.

A young man, thirty-two years of age; single; traveling salesman. He had been very dissipated for ten or twelve

years by way of hard drinking and excessive sexual indulgence. He rarely became intoxicated, however, but drank continuously. He had had gonorrhea quite often, followed by gleet, with which he had suffered for the past ten years. During one of these carousing bouts he was stricken with paraplegia and incontinence of urine. He had been in this condition for twelve hours before I saw him. The urine was passing involuntarily from overflow of the bladder, indicating paralysis of sphincter urinae.

I treated him for the prostatic trouble, and in about two weeks he began showing improvement, which continued steadily until, at the end of the third month, he was able to stand upon his feet and pass urine normally. He went home and I did not see him again for more than a year, when he returned to my office walking with a cane. He laid his cane aside to show me that he was not forced to use it, as there was but little indication of his former paralysis. He reported that he had had no trouble in voiding urine for some months; but that one peculiar symptom was that he was able to have an erection and intercourse normally without passing semen, and without any sensation in the way of orgasm. He also stated that the erection could be produced at will and maintained for an indefinite period, often several hours, enabling him to complete the act of intercourse several times with no ill effects except prostration from physical exertion. I have heard from him several times during the past five years. He reports his condition about the same as when he saw me last. His health otherwise is good.

Case XXIV.

Was that of a man of forty-eight years of age; married; very corpulent; healthy and in perfect condition up to two years before seeing me. He had then begun to suffer with

chronic enlarged prostatitis and from that time was totally impotent, manifesting all the symptoms usual in such cases. He was treated, and practically relieved of the symptoms. There was a normal recurrence of the functions of the sexual organs, enabling him to have intercourse without discomfort. About a year thereafter, he reported to me that he had begun to have trouble in the way of lack of emission of semen during intercourse. It would pass about midway the urethra, where it would stop, apparently from lack of force in the muscles to expel it. There was slight orgasm during the ejection.

There are other cases of aspermia that result from occlusion of the ejaculatory ducts as result of cicatrix following prostatic abscess; other cases have been reported where the ducts were closed by prostatic calculi, thereby obstructing the passage of semen.

CHRONIC PRIAPISM.

In some cases we meet with the converse of impotence (impotentis coeundi) as due to chronic prostatitis and prostatic urethritis. While the initial causes, in most instances, of the inflammatory conditions are the same, yet it is often found that these have been aggravated by the use of sounds, caustic applications to the deep urethra, or other violent measures.

The localized inflammatory focus, situated usually in the prostate and caput gallinaginis, reacting upon the sexual brain independently of mental influences, causes prolonged irritative erections that are exceedingly wearing upon the nervous system. These distressing erections more frequently occur during sleep, arousing the man by their irritative effects and disturbing his sleep for hours at a time. Paradoxical as it may appear, men so effected are generally impotent and are incapable of obtaining an erection under

normal influences. There are others similarly affected where one sexual congress only intensifies the desire for a repetition, which is repeated until complete mental and physical collapse results.

Case XXV. Chronic Priapism, Prostatic Inflammation.

Man, aged fifty-four; healthy from all external appearances; very temperate and a good business man. He had had one attack of gonorrhea, from which he had apparently recovered. For four years he had been annoyed with persistent erections at night, which would often last two or three hours at a time, necessitating getting up and walking the floor to get relief. On attempting intercouse there was a complete collapse of the organ and utter failure, regardless of all efforts and remedies used for the purpose.

He had been subjected to the use of sounds, aphrodisiacs, bromides and massage of the prostate without benefit.

Immediate relief followed restoration of the inflamed gland and prostatic urethra to their normal condition.

Case XXVI.

A minister, bachelor, aged forty-two, and an exceedingly intellectual man, consulted me for chronic priapism. He had been annoyed with the erections for about five years. At first, it only disturbed him at night, but for the past three years it had annoyed him both day and night. He had consulted many physicians regarding the trouble, and several had given him different forms of bromides, which, as he said, had only served to impair his mental faculties, without giving any relief to his embarrassing condition. He requested me not to give him anything that contained any of the bromides, as it was necessary for him, in his line of work, to maintain an active brain. He further

stated that these erections often remained hours at a time, even during the day, which maintained the organ in a tender and often painful condition. He stated that he had lived a perfectly virtuous life, and there was no reason to question it. I explained to him that the symptoms indicated a local inflammation of the prostate and adjacent organs, and that systemic medication could never relieve it. The gland was very sensitive, and quite rebellious to treatment, owing, doubtless, to his abstemious habits.

After six months of irregular treatment of the prostate and prostatic urethra the irritation subsided and there was no further trouble with the erections.

Case XXVII.

Physician; single; age thirty-eight; never had gonorrhea. He began having trouble when about twenty years of age. He was treated with sounds at first, without relief, then injections and systemic medications. "For the past twelve years," as he states, "he has been tortured with erections, the organ remaining erect for hours at a time. There has also been a gleety discharge for fifteen years; at times it is scarcely noticeable. Seminal emissions, too, occur, at times, even two or three within a week, then again not for a month. Emissions now occur without much sensation. They make me dreadfully weary, causing pain in back and back of neck. I can't stand mental work, and my memory I find is perceptibly failing. I have treated myself, and was treated in New York by two physicians for two years, one of whom gave me bromide of sodium and ergot for the annoying erections without the least benefit. The other used cold sounds and massage of the prostate—all of which gave no relief."

In case of this nature the prostatic urethra and the gland itself are very tender and much inflamed, which on being relieved, all other symptoms are allayed.

MARRIAGE.

The question of when a man should marry, who has had chronic gonorrhea, prostatitis or any perverted sexual function, has been one of paramount importance, and has elicited much discussion and various expressed opinions among genito-urinary specialists throughout the world.

Men suffering from one or more of these troubles are frequently advised to marry before procuring relief, which has entailed untoward misery, unhappy unions and often separation. This subject was discussed at great length at the Sixth Congress of the German Dermatological Society, at Strasburg, in 1898, and it was the concurrent opinion of those present that just so long as gonococci could be detected in the secretions, they were infectious.

One other point upon which all agree is that the gonococci do hide and remain dormant for an indefinite period within the prostate and adnexa, and, while it has been proven that these germs are especially susceptible to germicidal agents when brought into direct contact with them, how are you going to reach them? As Weiss says: "What means do we possess to entice these parasites to the surface?" There is no means known to the profession of enticing them from their hiding places, and the only way to get rid of them is to destroy them within the gland by cataphoresis or electro-magnetic influences.

There are other diseased conditions of the prostate, however, not dependent upon gonococci, that are equally as essential to relieve before marital relations should be advised. The cause and treatment of these have been given in a previous chapter.

CHAPTER VII.

NEUROSES OF THE PROSTATE.

The sexual organism, of which the prostate is one of the chief factors, is so intimately blended with the central and sympathetic nervous systems, that disease of this gland provokes the most varied neurotic disturbances.

The lumbar spinal center, sacral plexus and great sciatic nerve of the cerebro-spinal system and the hypogastric plexus of the sympathetic, are in such close reciprocal relation to the nerves of the prostate, that disturbances in the organs to which the former are distributed are frequently the first precursors of disease of the gland.

Often have I seen men who had been dosing their stomachs for dyspepsia, their livers for torpor, their bowels for constipation, their heads for neuralgia, treating sciatica for malaria, plastering their backs for Bright's disease, taking sea voyages for melancholia, when the origin of their trouble was centered in the prostate, and the relief of which cured their other ailments. There are many of these cases, too, that have no subjective symptoms directly pointing to disease of the gland, yet upon examination the objective symptoms would be most marked.

The erroneous idea that prevails among many physicians and the majority of laymen that disease of the prostate only results from some venereal disease, or is a sequel of senility, deters them from an examination of the gland for these obscure troubles.

NEURASTHENIA.

This is one of the most prominent symptoms in diseases of the prostate and is manifested in almost every conceivable form of nervous disturbance. The disease so commonly referred to as "nervous prostration" might, in the large majority of instances, be traced to the prostate, should the attending physician take the care to examine the patient for this trouble. The examination is easily made, and even should such trouble not exist, it is better to be aware of the fact, and so dismiss one probable etiological factor than to continue groping in the dark and dosing the patient "ad nauseam." Because of the almost universal belief of both doctors and laymen, that to suggest disease of this gland would imply that at some time in life the patient had had some form of venereal disease, the physician is loth to make such suggestion. And, even should he muster courage to do so, he would, in all probability, be met with the prompt reply, "Why, doctor, I never had any disease there in my life." It has been difficult for me at times to convince people that these troubles are not always the result of venereal disease. But, when the patient understands that the doctor's desire to know positively that no such disease of the gland exists is in order to discard it as a possible cause, the patient will, in almost every case, submit to an examination, and, by means of the *bougie a boule* the trouble in the prostatic urethra will be detected. The examination through the rectum or by cystoscope could be made at the time, or on some other day, should objection be made. Many cases of nervous troubles of an obscure origin have been cleared up in this way.

Sexual neurasthenia is not an idiopathic disease, and rarely, indeed, can it not be traced to the prostate or genital organs as the prime cause.

I remember hearing a lecturer, at the Blockley Hospital, Philadelphia, say that he had often declared that he would not vote for any man to graduate in his classs who failed to suggest examination of the prostate in answer to the following question: "What would you do if a man presented himself with an obscure nervous disease?" At the time I considered the statement absurd—especially as the lecturer was not a Jefferson professor—but I have since often thought it a *very wise utterance.*

Genito-urinary diseases of men as result of prostatitis and the various functional nervous disorders related thereto, whether as cause or effect, are in the same condition that diseases of women were in fifty years ago. At that time the nervous symptoms that accompanied such disorders in females as lacerations of the cervix or perineum, congestion and displacement of the uterus and ovaries, were succinctly, if unscientifically, grouped under the head of hysteria, and these symptoms treated without reference to the cause and often without the least effort to arrive at a correct diagnosis. And today the nervous maladies resulting from a morbid condition of the prostate gland, such as mental depression, morbid fears, nervous dyspepsia, palpitation, deficient mental control, headache and backache, are generally dismissed in the same easy fashion to the category of hypochondriasis.

Considering the immense importance of the problem involved in the relation of the genital function to the nervous system, and the vast amount of suffering entailed upon mankind by the ignorance of the patient and the indifference of the physician in regard to these problems, remarkably little effort has been expended in their solution. Whether there is or is not such a disease as spermatorrhea, and if there is, what is its nature and effect; when are involuntary emissions pathological; what are the various

kinds of impotence, and how should they be treated; how are morbid conditions of the prostate gland and urethra reflected to the nervous system; how do nervous and other diseases affect the genital functions?—these and other problems of great practical interest have only within very recent years begun to attract the attention of the investigator, while the profession at large are as yet almost blind as to their importance.

While the excitant cause of sexual neurasthenia is traceable in the majority of instances to disease of the prostate, yet there are other exacerbating etiological factors that should be taken into consideration. Prominent among these are excessive cigarette smoking, alcoholic stimulants, business cares, domestic worries and climatic conditions. All these have to be taken into account as concomitant factors in genital neuroses.

The symptoms of sexual neurasthenia are so protean in nature, that, according to the prominence of one or other stage of its development, it is frequently diagnosticated as oxaluria, lithemia, or disease of the imagination.

Its real and tangible cause is either overlooked, or an attempt to discover its source neglected. The physician is usually content to guess at the cause, prescribe some innoxious remedy and await the result. Others resort to nux vomica or its alkaloid, combining or alternating it with various other aphrodisiacs, which serve to excite an already tender or diseased prostate. The man returns from time to time and reports some better, then worse; when, in fact, he is growing gradually worse all the time. This condition may continue for a long time, until the man finally becomes aware of a twitching of the muscles of the lower limbs; in others the fingers tingle or there is an impairment in the use of an arm, noticeable in writing or handling a knife or fork while eating. In others, the lower

limbs feel heavy or numb, requiring an effort to raise them in walking.

Many men begin with pains in their back, which extend over their hips, down to the calves of the legs. The latter is a very common symptom, owing to the close relation of the sciatic plexus to that of the prostatic plexus and associate ganglia.

Melancholia is a very common sequel of prostatic disease, and it, just as other neuroses resulting from disease of the gland, assumes a periodicity at first; subsequently it may become continuous. I have clinically observed in men suffering from prostatic neuroses that the periodicity is markedly analogous to the menstrual epoch of women, in that it first appears in paroxysms of about four-week intervals; and, as the disease becomes more aggravated, it assumes a periodicity of two weeks; when, as the gravity of the disease becomes serious, it is daily or continuous. I would advise, in these obscure nervous diseases, or even in any chronic condition, where a monthly exacerbation appears, the examination of the prostate. In some cases the periodicity is manifested in bouts of drinking.

It may seem absurd to some; and, if on examining the gland it is found to be healthy, there is no harm done; when you can then dismiss it as being the most probable etiological factor.

Clinical observation has demonstrated that young men suffering from prostatitis of the sub-acute form, are more subject to paraparesis; while middle aged and old men affected with congested enlargement of the gland are more subject to hemiparesis. While this is not an invariable rule, yet in the very large majority of cases, if the prostate is examined in these paralytic diseases, it will be found to be diseased. Melancholia and mania may follow either character of the disease, but it is rare in senile hypertrophy.

The innumerable symptoms that result from reflex irritation of the prostate are brought about by the sympathetic system or vaso-motor nerves as well as by those of the cerebro-spinal system. The more highly developed the nervous system of the individual, the wider the effect produced by the shock of any disease of the gland. But in the spreading of the effect, the intensity at any given point is diminished. This furnished the explanation of the seeming paradox that strong constitutions are more liable to severe local disease than are neurasthenics. The molecular changes produced by disease meet with far less resistance in highly involved organizations which are good conductors of every kind of motion, while the resistance offered by a strong constitution tends to produce local functional disease. Thus it is that functional excesses in the strong tend to produce excessive functional nervous diseases.

The same fact serves to explain another apparent paradox, that nervous hysterical patients, who run the gamut of nervous disorders every day of their lives, are frequently long lived; disease, as it were, proving an antidote to disease. The destructive force of disease which meets with vigorous resistance in a strong body, concentrates itself locally with lethal violence, while in the weak, nervous constitution, it is conducted away, attenuated and rendered comparatively innocuous.

MELANCHOLIC MANIA.

This is one of the most distressing as well as varied in its manifestations of any of the neurotic diseases following prostatitis. Among the incidents of most every physician, long in practice, the proverbial phrase that "It never rains but it pours" has been tangibly presented at some time of his professional career. It fell to my lot

some years ago to have had quite a number of these cases of melancholia following in close order to one another.

Case XXVIII. Chronic Prostatitis and Melancholic Mania.

Merchant; aged forty-four; very emaciated, though strong and an active business man. For two years he had suffered with occasional attacks of nervous depression followed by hot, alternating with cold, flashes. These "spells" as he termed them, had gradually grown more frequent and aggravated. At first they would occur every three months, then monthly, and finally every two weeks. His temperature would never rise more than one-half degree, even when he said he felt as though he was burning up. I inquired as to the condition of his kidneys, bladder and sexual organs. He was very reticent regarding them and at first strenuously objected to an examination. Finally upon submitting to an examination, the prostate was found to be exceedingly sensitive and slightly swollen. It was so sensitive that he refused to have it treated. He continued to grow worse until he was advised by his wife and friends to take a rest. He went to a country town and engaged rooms at a hotel. He had been there just about ten days when he had "one of his spells." His wife sent for a physician, who, after having examined the man, prescribed some innocuous remedy and left. After having taken one dose of the medicine, the man conceived the idea that his wife had connived with the doctor to poison him for the purpose of procuring his money. He violently opposed taking another dose of the medicine, to avoid which, having been persuasively urged to do so, he leaped from his bed and ran out of his room in his night clothes down the stairs from the sixth floor to the office, screaming "murder." He maintained that I, only, knew his constitu-

tion and was capable of prescribing for him. He had his wife wire me to come and see him (some two hundred miles distant). Several telegrams were sent daily for three days, when I finally decided to go. On my arrival at noon, and making myself known to the clerk at the hotel, he said that my patient was in the dining room, across from the office, and for me to walk in and get my dinner. I was cordially greeted by both man and wife, who requested me to order my dinner. Questions were immediately propounded by the man regarding incidents at home, evidently, as I understood, to avoid mention of his health. He was quite cheerful, apparently, and discussed different subjects intelligently. The subject of his health was not mentioned until on leaving the dining room, he requested me to go with him to the parlor, where he narrated the incidents before mentioned, in a very quiet and rational manner, explaining his reasons therefore. He stated that he had had "one of his spells," and that the first dose of medicine was poison, and that he had acted in that way to attract the attention of the police, that they might arrest and lock him up until I could arrive to treat him. I remained with him several hours and left him in the best of spirits; he consenting to remain there several weeks until he regained his health. On the following morning I heard that he had returned home and was violently insane. He was arrested by the police and incarcerated. He sent for an attorney, to whom he explained that he had been arrested and imprisoned for sinister purposes. He was released, as he was as rational, apparently, as any one. In a few days thereafter he again became violent and was placed in custody at his home. During these attacks he would suffer with continuous priapism both day and night. During the rational intervals he would be comparatively free from the annoying erections. He

was carried to the asylum in this state, where he remained a few months and died.

CASE XXIX. INSOMNIA, MELANCHOLIA, PROSTATITIS.

Clerk; aged thirty-eight; married. Very large and apparently in robust health. I was called in consultation to see the man, when the attending physician gave the following history: The patient had never had any venereal disease, but had been addicted to excessive venery in early youth, and, at times, until within the past two years. He has paroxysmal periods of excessive sexual desires. One sexual congress seemed to intensify the propensity for a second or third in rapid succession. This would last for three or four days, when he would lapse into a state of melancholy and insomnia. He had first noticed the attacks monthly, attended with only slight depression of spirits; but for six months prior hereto he would be scarcely relieved of one attack before the recurrence of a second. He would not average more than five hours' sleep during the twenty-four, and only then under the influence of a narcotic. There were few symptoms indicating prostatic trouble. The urine was voided more frequently than normal at times, and contained an excessive quantity of phosphates and some uric acid.

I advised an examination of the prostate; this was opposed by the patient and not encouraged by the attending physician. I did not hear from the patient again for six months, when I was again called to see him with his physician. He had grown steadily worse and, though taking from sixty to eighty grains of sulphonal daily, he was sleeping not more than three hours during the twenty-four. He had developed a religious mania and was singing and praying much of his time. He had now become totally impotent. I again insisted upon an examination

of the genital organs, which revealed both chronic prostatitis and vesiculitis. Immediate improvement followed treatment of the gland and vesicles, and today he is a healthy, active business man.

I could report several other similar cases with various complications that have come under my observation, where relief of the prostate and vesicles was followed by complete recovery of all other nervous symptoms.

The perversion of the sexual organs, as cause of lunacy, gave rise to the advocacy and practice, in some of our asylums a few years ago, of castration for its relief.

Melancholia as a result of prostatitis does not always develop insanity. I have noted its manifestations in the most varied phases of hysteria, mental and physical weakness, obstinate pessimism, and occasionally extreme optimism.

One hysterical patient that I can recall would lie down upon the floor and roll over and cry for a time and then laugh. He was forty-four years old, married, had three children, and never had gonorrhea. His prostate was so tender that he fainted when it was gently touched. He recovered entirely from his nervous symptoms after the relief of the prostatic trouble. These cases all have an exceedingly sensitive urethra, even those that never had gonorrhea.

Dyspepsia and constipation are common sequels of prostatitis, often, too, when there are no indications of disease of the gland. I recall one case that was brought to me by a former patient who had suffered with indigestion and flatulency for several years. During this time he had consulted many physicians and had taken all the indigestion remedies advised by both physicians and druggists. He was existing solely upon milk and some form of Battle Creek food. There was not an objective symp-

tom pointing to any form of disease of the gland, and I hesitated very much to suggest an examination of it. He readily submitted to an examination, to my surprise, when I found the gland slightly affected. I had him discontinue the use of medicines and eat sparingly for a few weeks. I treated the gland through the urethra and rectum on alternate days and did not give him a single dose of medicine. He fully recovered and gained twenty pounds in weight within two months and has never had a symptom of his former trouble since, though he eats anything he wishes.

Other cases of indigestion, with pronounced symptoms of disease of the gland, have been quite common.

Sciatica or affections of some of the branches of the sciatic nerve are common sequels of prostatitis.

Fig. XXII. illustrates the nerve and some of its branches. Those distributed to the muscles of the calf of the leg are more frequently affected, even when the great sciatic escapes. I recall one man fifty-two years old, who had sharp, darting pains in the calves of his legs, and, at times, in the thigh. He had been treated with "goat lymph" and otherwise for locomotor ataxia several years. His prostate was exceedingly sensitive. After the third treatment of the gland his pains disappeared and never returned.

I have seen several cases who had pain only in the heel. One of these had been suffering intensely for about a week, both day and night. He never had gonorrhea, nor had he any prominent symptoms of prostatitis. The pain immediately disappeared after the first treatment of the gland. It returned some days afterward, but finally left him entirely, after the gland had been relieved.

Fig. XXII. (Gray.)

CASE XXX. SCIATICA, PROSTATITIS, SPERMATORRHEA.

Clerk; aged twenty-six; single. He had gonorrhea of a severe type when twenty-one, which was long continued. He thought that he had never fully recovered from the attack. Some two years after the prime inception of the disease, he noticed a continuous oozing from the penis, vital depression and impaired function and erections. Subsequently pain in the back and left hip developed. It grew worse when sitting for a long time. Exercise relieved the pain for the time. He would pass several weeks frequently without noticing any special inconvenience, when, suddenly, he could scarcely arise from his chair. The attacks became insidiously more severe from month to month, until he had a severe paroxysm that confined him to bed for six weeks. During this time he suffered intensely, necessitating the use of large doses of opium for relief. The muscles along the course of the sciatic nerve became very much atrophied, leaving a depression in the limb. He had taken almost every conceivable remedy, together with a course of baths at Hot Springs, Arkansas, which only gave temporary relief. The direct static spark over the spine and along the course of the nerve gave the most relief, for the time.

Upon examination I discovered a slight stricture in the membranous urethra, chronic prostatitis and vesiculitis.

The sciatic pain was permanently relieved soon after beginning treatment of the gland. Massage of the limb restored it to its normal size.

IMPOTENCY.

Impotence may exist in a modified degree, or amount to total functional incapacity. There may be only a defi-

ciency of erectile power, or desire and capacity may both be lacking. Or, again, erectile power may be normal at times, when free from erotic excitement, and then become flaccid and useless in the presence of women. Sometimes an erection takes place at the proper time, but it does not last sufficiently long for intromission, much to the disgust and chagrin of the man. Sometimes premature ejaculation occurs, but often no emission takes place.

I shall not attempt here a discussion of the mechanism of erection, but it is chiefly under the influence of the nervous system, which is controlled mainly through the "sexual brain" as situated in the prostate, or, as many think, in the caput gallinaginis. There is no paralysis or loss of power in the muscular or vascular conditions of the organ that affect the mechanical part of the erection.

Failure to perform the act, at some one time, often becomes so impressed upon the mind of the man that even after the restoration of the prostate to its normal condition, it requires several efforts to restore confidence.

I recall the case of a libertine, who, suffering from prostatitis, had made repeated failures with his mistress, and after having been restored, would still fail with her, yet complete the act perfectly with other women.

There is often diminished sensibility of the penis and scrotum, which appear also cold and lifeless.

Impotency due to disease of the prostate and vesicles is almost invariably attended with seminal loss in some form; that is, in young or middle aged men. The terms in general use for unnatural seminal discharges are somewhat confusing, as they are often used synonymously. Those to which I adhere are nocturnal or involuntary seminal discharges, pollutions and spermatorrhea.

The first occurs in one's sleep and is attended with an orgasm that generally arouses him. Pollutions may take

place at any time, but more frequently during sleep, and emissions occur in a similar way to the former, but in a passive form, and not attended with an orgasm, which rarely arouses one from sleep.

Spermatorrhea takes place in a slow, dribbling manner, without erection or orgasm. It produces the sensation as though something was running from the penis. The latter may be concomitant with either of the acute forms. Moreover, it is often the case that prostatorrhea only exists, which is mistaken for spermatorrhea.

Nervous depression or moodiness is not usually due to the loss of semen, even when seminal discharges are prominent, but to the incessant reflex nervous irritation to the cerebro-spinal centers as result of the diseased glaud. Should an emission occur when asleep, and not oftener than ten days or two weeks, in a man of vigorous habits, it should not be considered pathological, when the man had abstained from all sexual relations during that time. Ultzman and S. W. Gross concur in this view.

I cannot impress too forcibly the importance of an examination of the gland in these obscure cases, as I know too well that physicians are prone to neglect such, and yield too readily to an obduracy upon the part of the patient to submit to an examination because of over prudery, or that it suggests venereal disease.

I can recall several suicides of prominent business men, who, if their prostatic conditions had been properly diagnosed and relieved, could have been saved an untimely death.

Men suffering from melancholia, as a result of prostatitis, are much more able to resist the evil effects of the disease when employed than when idle. It is very unwise to advise such men to go away for a rest. I have known of several instances where men were so advised, and who,

having no other mental employment than to brood over their ailments, became maniacal or suicidal.

The simple knowledge of impotency so preys upon the minds of some men as to aggravate their physical and mental condition, impair their digestion, disturb their sleep and wreck their health.

STERILITY.

Potentia coeundi does not always imply *potentia generandi*. The latter depends entirely upon the procreative power of the semen, while the former implies the ability of the man to complete the act of coitus.

It is a well-known physiological fact that healthy prostatic fluid is essential to perpetuate the lives of the spermatic germs until they reach their destination of impregnating the ovum. The vesicles, too, are important factors towards maintaining the vitality of these germs. The prostate and vesicles are in such close proximity and so allied in their physiological relations, that disease of one readily extends and involves the other.

It is not infrequently the case that men are able to complete the act of coitus, yet the spermatozoa may be lifeless or so impaired in vitality from perverted prostatic secretions as to render them sterile. The wives of such men are too often subjected to all kinds of treatment and operations for barrenness, when the fault lies with the men. Several cases of this kind have come under my care, where relief of the prostate was followed by fruitful results.

PROSTATORRHEA.

Ultzmann says: "With every sexual excitement as soon as erection of the penis has occurred, long before ejaculation of semen has taken place, a clear, transparent,

viscid drop, like white of egg, oozes from the meatus. This clear, viscid drop represents the secretion of the accessory glands of the urinary and genital tracts and consists of the secretions of the prostate, of Cowper's glands and the glands of Littre. Since the prostate is the largest gland in this connection, it is evident that the mass of this fluid must be the prostatic secretion. If this clear, viscid fluid is secreted in greater amount, indeed continually and without sexual excitement, this condition is called prostatorrhea."

The fact is that the normal viscid secretion attending sexual excitement and erections, is often mistaken for a pathologic state, when it really indicates a healthy condition of the gland and is premonitory to a seminal ejection. This prostatic secretion serves to lubricate the channels and favor the passage of semen, besides its aid in maintaining the lives of the spermatozoa.

Prostatorrhea is due to an inflamed condition of the gland as a result of gonorrhea, masturbation or other sexual excitements. Prostatic calculi or rectal diseases may serve as exciting causes, but they are more frequently the effect and not the cause of the trouble.

The differential diagnosis between prostatorrhea and spermatorrhea depends largely upon microscopic examination of the secretion. The presence in the secretion of Bottcher's crystals and amyloid bodies would point strongly to prostatorrhea, while the presence of spermatozoa would not exclude that condition as a possibility, as spermatorrhea often accompanies prostatorrhea, though the latter is much more common.

Azoospermia is a common sequel of prostatitis and vesiculitis, as the perverted secretions of these organs tend to devitalize and destroy the spermatic germs and render the man sterile.

The urine in these cases is variable in quantity, and is usually of light color, containing small shreds or hook-shaped flakes.

TREATMENT.

Successful treatment of these conditions depends upon proper diagnosis and the removal of the cause. As the etiological factors are almost invariably traceable to the diseased prostate and vesicles, these organs must necessarily be relieved before any permanent benefit can be procured. As the treatment has been discussed in previous chapters, the reader is referred thereto for full details.

There are some cases, however, of long standing disease of the prostate where, even after the gland had been cured,

Fig. XXIII.

there remains an impaired function of the genitalia, due to lack of nervous energy. For relief of this condition I have devised a bipolar rectal electrode, Fig. XXIII.

Fig. XXIV. shows the application of this electrode, one pole being directed to the prostate in front and the other to the sacral and hypogastric plexuses of nerves that minister to the pelvic organs. By passing the electrode further up the rectum the poles are in apposition to the vesicles in front and the genito-spinal center posteriorly. I have found this treatment very efficient in such cases.

It is a common practice among physicians of giving aphrodisiacs in these cases, without attempting to ferret out the cause of the trouble, which serves to aggravate an already serious condition. I was surprised to note that the distinguished Dr. Ultzman (professor of genito-uri-

nary diseases in the University of Vienna) advises the stroking of the external genital organs with electricity for impotency, yet further states (page 41): "This method of treating impotence is not infrequently accompanied by the most excellent results, only it has its shady side, and

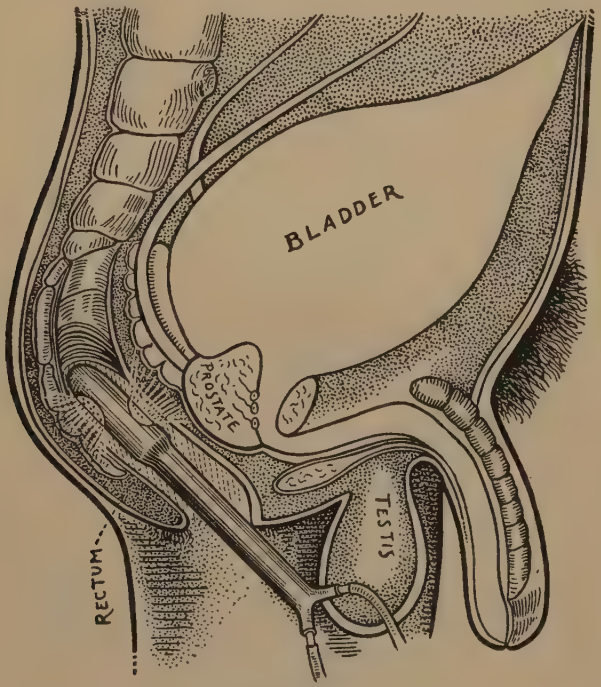

Fig. XXIV.

that is that nocturnal emissions are promoted, i. e., increased."

Impotency, which is most often the result of prostatitis, should never be treated by exciting the genital organs either with medicines or electricity, until the diseased condition of the gland is relieved, when, in the large majority

of cases, the normal function is restored without the use of any exciting agents.

There are some cases, however, in whom stimulating aphrodisiacs arouse transient genital activity which is usually followed by total impotence and seminal losses.

Prostatic Facies.—Just as Kelly describes an ovarian face in women, there is an analogous expression in most all men suffering from chronic prostatitis. It is quite noticeable in many men, which readily disappears upon restoring the gland to its normal condition.

Glycosuria and albumen often appear in minute quantities where neurotic symptoms are prominent; but they are of transient nature and readily disappear as soon as the local trouble is relieved. Neither of these conditions implies disease of the kidney. Since Claude Bernard demonstrated that puncturing the floor of the fourth ventricle would produce albuminuria or glycosuria, it is now a well known fact that many nervous shocks cause them to temporarily appear.

Imaginary Impotency.—Much has been written and spoken of impotence existing only in the head. Many of these expressed opinions have originated from some of the most prominent surgeons and genito-urinary specialists, who had either failed to locate the cause of the trouble or to relieve it after having discovered the source. But very few of these cases are really imaginary.

Case XXXI.

Aged thirty-two; single. Never had gonorrhea. He had been addicted to sexual abuses followed by frequent emissions and chronic discharge. The first physician treated him with tonics, or constitutionally; the second with sounds; the third with both. After having gone the rounds for six years, trying to get in shape to marry, he

was advised to do so, and that he would then become normal. The trouble continued. Two years after his marriage he came to me for treatment. I discovered an inflamed prostate and urethra. Normal functions returned just as soon as these organs were relieved, and without taking a dose of constitutional medicine.

Case XXXII.

Aged twenty-eight; strong and robust in appearance. He was not sure whether he had ever had gonorrhea or not, as some physicians had told him he had, and others that he had not. He was annoyed with excessive pollutions. Different physicians advised him to marry and that his trouble was in his head alone. He recovered his sexual powers when relief of his prostate was effected.

PARAPARESIS.

This condition especially calls for a thorough examination of the prostate gland and adnexa. For the past fifteen years, since I have had my attention more especially directed to the prostate as an etiological factor in this trouble, I have not seen a single case of paraparesis or impaired function of the lower limbs where the gland was not involved, unless due to syphilis or lesion of the spine. This condition occurs more often in young men who have been subject to excessive masturbation or sexual indulgence.

The onset of the trouble is usually manifested by a sensation of heaviness or weight about the lower limbs, which, as the disease progresses, becomes so marked as to interfere in climbing stairs. There is rarely any pain in these cases at first; and should it supervene at all, it is usually manifested by a few darting pains in some of the branches of the sciatic nerve, in the region of the popliteal space or calf of the leg.

The progress is usually of an insidious nature, and especially if due to masturbation. If due to excessive sexual indulgence and accompanied with a bout of drinking, it is liable to be sudden. I have seen cases of the latter where sudden paraplegia resulted. In rare instances of this affection, the pains, as before described, have been the prominent premonitory symptoms. Others still have described sensations as though something was creeping up their limbs.

Case XXXIII.

I recall the case of a man, twenty-eight years of age, who had been suffering eighteen months with paresis. There was no pain in the limbs, but the impaired function became more perceptible from week to week until there was total loss of power. During this time the young man had been treated by several physicians, some of whom diagnosed the case as that of locomotor ataxia. Not one of them suspected the prostate as the cause of the trouble, or even examined it. When I first saw him he had no more use of his lower limbs than if they were made of rubber. I found him totally impotent, with a persistent prostatorrhea and occasionally nocturnal pollutions.

I directed my treatment entirely to the prostate, when improvement began at once. In six weeks time he could stand upon his legs, and after six months he was back at work, and one could scarcely detect any defect in his gait.

HEMIPARESIS.

This trouble is very common among older men suffering from enlarged inflammation of the prostate. The first manifest symptom is a dragging of one foot in walking, scraping of the pavement. This is often noticeable by one's companion before the person himself has observed it.

Case XXXIV.

I recall one case who said the first time he had his attention called to any defect in his left foot was by his wife, when walking upon the street, when she said: "Will! for goodness sake quit scraping your foot on the pavement." He had never noticed it before, and when his attention was called to the fact he went along for some distance without doing so again; but his mind being withdrawn from his walking, he was again reminded of it by his wife. When dressing the next morning he first noticed that the sole of his left shoe was much worn out at the toe, while the other was not. From that time on he noticed a perceptible impairment of his left side. This was followed by loss of co-ordination in writing.

This case applied to me for treatment eighteen years ago. I did not know as much about the cause of these troubles then as now, so I treated his spine by electricity, massage and mechanical movements for several months, which gave him temporary relief; but he was gradually growing worse from month to month. He finally mentioned certain symptoms implicating the sexual organs that led to an examination of the prostate, which revealed the seat of the trouble. Noticeable improvement followed the treatment of the gland within two weeks from the time of its beginning. Three months thereafter he was able to resume his work and left the city. I did not see him again for nine months; when upon his return he was so far well that his defect was almost imperceptible.

Case XXXV.

Merchant; aged fifty-six; married. Up to his fifty-third year he had been quite active. About that time he began to notice that he would scrape his right foot upon

the pavement when walking. He could prevent this scraping, at first, when his attention was directed to it; but immediately on withdrawing his mind from the sluggish foot, the scraping of the pavement would recur. He next noticed an impairment of his right hand when attempting to tie a bundle. He was unable to grasp a string sufficiently tight to tie a knot. This condition grew worse, by degrees, until he could not use his knife while eating. The leg was equally impaired. Both hand and leg began to improve after the second week's treatment of a congested enlarged prostate. The gain was steady for two months; but there was still an impaired function. I then began the application of the bi-polar electrode as illustrated (Fig. XXIII.), passing the current through the prostate in front, and the sacral plexus and lower part of the spinal cord behind. Marked relief followed this treatment.

I recall another similar case of a harness maker, whose right hand became so impaired that he could not draw a thread in stitching. His right leg was also impaired. After being treated in a similar way to the foregoing case for six weeks, he was enabled to resume his work. The treatment was continued for six months, at irregular intervals, when he fully recovered.

APPENDIX.

CHAPTER VIII.

ELECTRO-PHYSICS, ELECTROLYSIS AND CATAPHORESIS.

I shall treat these subjects in their chemic, physiological and therapeutic relations only in so far as they pertain to my subject.

Introduction.

A knowledge of the construction of batteries and accessories, the manner of producing the different currents, together with their various modifications, is as essential to their proper understanding and scientific applications as is that of chemistry, physiology and anatomy to the practice of medicine and surgery. Anyone capable of using these potent agents in a scientific and practical manner with impunity should be able to make, or have constructed by his own directions, batteries, accessories and electrodes to meet all indications that arise. I have known of frequent instances where physicians were using the galvanic current who did not know, positively, which was the anode or cathode, yet there is as much difference in their effects as that of calomel and opium. Others regard the sinusoidal and faradic currents as the same or similar in effect, when their properties are almost as different as that of the two poles of the galvanic.

The empirical use of the currents is not confined to the country physicians, but it is often so used by some of our leading specialists, and so-called professors of electrotherapeutics.

I have had quite a number of physicians consult me who had *diplomas* in electro-therapy, that were ignorant of its first principles, and, too, where most of their teachings had been erroneous. A physician, a few months ago, called to see me, who was taking a course of instruction in electro-therapy. I asked him what were their teachings regarding the properties of the sinusoidal current. He said that one of his professors had said that it was the same in effect as the faradic currents. I then gave him a list of questions to ask his professors regarding the properties of the direct and alternating incandescent currents, the sinusoidal and induced. On the following day he reported at my office, and stated that he had propounded the queries, as I had suggested, to each of the lecturers, and that neither of them agreed upon any point.

A lack of knowledge of physics and the properties of the different electric currents, as evidenced by teachers and writers upon the subject, has evidently given rise to the following from Dr. S. H. Morrell, in the *Times and Register,* March 16, 1895, on "A Plunge into Electro-Therapeutics," who gives some wholesome advice to beginners which thoroughly accords with my views. He says: "If you wish to acquire skill in the use of electricity, don't set about it alone, and don't rely on what you find in text-books. If you can induce a reliable expert to take you as a student for a few months, do so, no matter what it costs. As there are various branches of electrical work in which special technique is employed, for instance in genito-urinary and gynecological practice, you should obtain a short course of practical instruction in each. When you have devoted six months to an apprenticeship of this kind, you will have laid the foundation for ultimate success."

I mention these facts only to illustrate why electro-

therapy is still regarded by many of our leading physicians as *sub judice,* who have not given it special attention or clinical study.

Many of the most scientific physicians in the world attest the fact that by the proper selection of the currents and accessories, and its appropriate application to certain pathologic structures, it relieves the morbific conditions with the impunity that cannot be effected by any other means known to science.

The proper use of so intricate and yet so worthy a remedy could not be brought to perfection by a merely superficial series of experiments, nor can at present a passing glance at a standard author warrant sufficient knowledge for successful treatment by its use. The different currents and different strengths, each are studies in themselves that demand careful perusal on the part of the student, of each and every form separately, as though it were an independent study bearing only a distant relation to the common subject. This accounts for, in part, why the general practitioner too frequently wholly neglects the agent that will bring about the best results in the treatment of his patients suffering from prostatitis, and resorts to the use of drugs that will frequently do infinitely more harm than no treatment at all. Not that it is a willful neglect on the part of a conscientious physician who always tries to do the best by his patients, but rather because, even though he would have sufficient time amid his numerous duties to study thoroughly the applications of the different currents, facilities for their use and necessary equipment in order to justify gratifying results would be wanting. In short, electrical treatment is a specialty that demands for the successful management of cases a specialist who can devote the greater part of his time to the supervision of special apartments and special equipments that cannot

receive necessary attention in the busy routine of a general practice. In the hands of such a one sufficiently skilled to cope with the various forms of chronic prostatitis, and possessing all requisite appliances, the efficacies of electrical treatment cannot fail to prove itself as being far superior to all agents that may be employed for the relief of this form of disease.

Electricity, like all other potent remedies, has its limit of utility, and it is only within these bounds that its benefits are claimed by the author.

Electricity yields negative results wherever its application is not thoroughly understood, as where the galvanic current is applied where the faradic or sinusoidal should be used; or when too weak or too strong a current—either has no effect or irritates the parts; or when it is made to comprise the whole treatment, and no pains are taken to ascertain the underlying cause of the disease and that also judiciously treated, nor to build up the general system in conjunction with this treatment. As is the folly of treating a patient with tonics with a view of adding weight to his body, and still denying him the proper food for the accomplishment of that purpose obviously evident, so also should be the treatment of a patient by electricity without attention to general hygienic principles. The efficacies of electro-therapeutics are denied by many physicians who, in good faith, have never devoted sufficient time to the study of its proper application, and hence every trial has been attended by failure; and those who, skeptically biased, have never directed their attention to its uses, and in order to smother its growing popularity declare it harmful in effect and too dangerous for use.

Because a remedy is not rightly understood and its use is not attended with success merely for want of knowledge on the part of those who deny proper time to its study, it

does not necessitate abandonment on the part of others who are thoroughly versed in its effects, and in whose hands it does not fail; and much less should it be undervalued because subtle charlatans with medical pretenses ensnare unwary victims by its improper uses. In the hands of an incompetent physician most all therapeutic agents are dangerous, be it an opiate, massage or mustard; and electricity is no exception to the rule; yet who would decry the beneficial effects of an opiate prescribed by an able physician. And since, therefore, most of our worthy remedies have a dangerous side, if carelessly employed, why then should the use of the electrical current be abandoned when other agents, infinitely more dangerous, still maintain full sway in the treatment of diseases?

Electrical treatment is a method of treatment that has come to stay. Prejudice cannot uproot it, nor bungling usage soil successful records. Yearly, as new and more efficient methods and apparati are brought into use, its range of employment grows larger and its triumphs of success become more apparent. And today, from among all the various agents for the successful treatment of diseases of the prostate, electricity, in conjunction with suitable medicinal remedies, incontrovertibly stands in the front rank.

CHAPTER IX.

ELECTRO-PHYSICS.—CONTINUED.

All substances, whether organic or inorganic, are capable of electric excitation. The electricity thus excited affects bodies differently. This difference in the electric condition of one body as compared with that of another constitutes what is termed electrical potential. Bodies are not under all circumstances of the same electrical potential; in fact, they vary very much in this respect. An element of higher potential is positive to one of lower negative, yet negative to another still higher. For instance, zinc is positive when coupled with copper, yet negative with sodium. The term potential, therefore, is a relative one. The earth is usually taken as the standard, and assumed to be at zero potential.

All energy or chemic action exerted upon bodies of different potentials evolves electricity, and there is a constant tendency toward the establishing of an equilibrium between them, by the passing of the current from the positive or higher potential to the negative or lower.

There being no absolute non-conductors, all bodies would soon be brought to an electric equipoise were it not for the constant generation, or evolution, of electricity by energy or chemical action as exerted upon bodies of different potentials. It is a mistaken idea, as expressed by many, that the energy exerted by the diurnal and annual revolutions of the earth produces an inexhaustible supply of electricity. As the earth revolves through ethereal space there is no friction, no energy exerted; hence there could

be no electricity evolved. Astronomers agree that the earth has not lost a fraction of a second of time for hundreds of years; this would be impossible were there sufficient friction or energy exerted to evolve electricity.

There are three ways by which electricity is transmitted between bodies, viz., conduction, induction and convection. It flows in direct proportion to the conducting media and inversely as to the resistance; though always, other things being equal, in the direction of the least resistance.

Conduction is the property possessed by bodies of transmitting electricity from positive to negative, when the conductive body is brought in direct contact with each pole.

A knowledge of the relative conductivity and resistance of bodies, used in the construction of batteries and appurtenances, is indispensable to a thorough understanding of electro-physics, electro-physiology, electro-therapy and electro-surgery.

The best conductors for all practical purposes are copper, zinc or silver. The size of the wire in the conducting cords must also be considered, as the conductivity of the current is influenced markedly thereby. Especially should this precaution be observed when using a current of large volume or amperage, as in applications of the cautery current. Those of high tension and low amperage, however, do not require such large cords.

The term conduction is a relative one. The best conductors give a certain amount of resistance, and the longer the distance the current traverses from the generator or battery, the greater is the resistance, or impaired force of the current, other things being equal. As before stated, a large collection or size of wires overcome this to a great extent. There are also certain very poor conductors, or practically non-conductors (yet in fact there are no non-conductors so far known to science), that are used as

insulators. Insulation means the prevention of the escape of electricity from a conducting body, or wire, by so-called non-conductors. Glass, rubber, silk, wool, German silver and graphite are those in general use.

Owing to the great resistance offered by German silver to the flow of the electric current, and, too, its property to withstand heat, it is very much used in the construction of rheostats. Graphite is also extensively used for the same purpose. These two substances are used almost exclusively in the manufacture of rheostats for utilizing the incandescent currents, both direct and alternating, for medical and surgical purposes.

Induction is the force exerted upon bodies brought within the field of an insulated electric current, or magnet. This force is exerted by the attractive and repulsive properties of atmospheric molecules, interposed between the insulated current, or magnet, and the body in close proximity thereto.

By way of illustration, suppose a positive or negative pole of a magnet is brought within close relation to a plate of soft iron, though not in contact. The latter would become magnetized by induction. This is accomplished by the well-known law of physics, that unlike attracts and like repels. The magnetic pole, whether negative or positive, attracts the atmospheric molecules interposed between it and the iron plate. The molecules thus attracted become charged with the same magnetism, and are immediately repulsed (like repels like); they are driven from the magnetic pole and strike the iron plate and impart to it the force obtained from the magnet. These molecules are so numerous and rapid in their course that they maintain magnetic properties in the iron plate just so long as it is retained within the field of the magnetic influence.

A somewhat similar experiment of induction may be

given by the passage of a continuous electric current through an insulated wire surrounding a soft iron core, when a second insulated wire is wound over the first, but having no direct connection with it. A current is produced in the second wire by induction, and passed always in the opposite direction to that of the primary current.

Magnetism and electricity are interchangeable forces, or different manifestations of the same force, as they are readily convertible one into the other. The earth being the reservoir or store house of all unused electricity, it therefore constitutes one great magnet, to which all overcharged bodies of a higher potential tend to unload, as is illustrated by the lightning from the clouds passing to the earth. Moisture favors conductivity; hence the zig-zag form of lightning in its passage to the earth.

Medical Electricity.

Electric currents are produced in different ways. Chief among these, in so far as this work is concerned, are those generated by dynamos, cell batteries and static machines. Dynamos are so constructed as to produce two different forms of current, the direct incandescent or Edison current, and the alternating. The direct incandescent current and the galvanic current, as generated by cell batteries (not the cautery) are the same in effect.

Whenever the direct incandescent current of the 110 volt circuit is accessible, I would advise it to be used always in preference to that of any cell battery, for several reasons. First, because it is regular and constant. Whether used five minutes daily, all day or even a year, the current is invariable, accurately measured and of known electromotive force. The cell battery must necessarily become weakened by use, as caused by the corroding of the positive element and exhausting of the excitant fluid.

There are various kinds of apparati, or batteries and accessories, made for the purpose of utilizing the direct incandescent current, by modifying them in various ways, for therapeutic purposes. They all tend to produce the same result of so harnessing the currents as to use anywhere from one to one hundred volts, and so modifying them as to meet therapeutic indications.

Anyone thoroughly familiar with the mechanism, the separate uses of the apparati and the different properties of the currents can handle them with impunity. A novice is much less likely to do harm with the direct incandescent current than with a cell battery constructed to produce the same electro-motive force. Still another advantage is that it gives only two-fifths of an ampere, while cell batteries give from one to one and a half ampere, and are, in consequence, much more iritating in procuring the same current strength. Cell batteries are troublesome and expensive to keep in order, even by an expert; and often just at the critical moment there occurs a break in the circuit from an exhausted cell or from other causes. Good work, however, can be accomplished by means of them, although they require constant attention and testing to insure their being in good working order. While the electro-motive force, or voltage, as produced by cell batteries, depends upon the number, quality and condition of the cells in the circuit, yet the amperage, or volume, remains about the same whether one cell is used or one hundred; that is, when the positive and negative elements are alternately connected.

Galvanic Cell.

If two elements, metallic or non-metallic, differing in *electrical potential,* be connected at one extremity by a conductor and immersed in a fluid capable of chemic

action upon the higher, there is at once produced an electric current which passes from the higher or positive element to the lower or negative. Substances so arranged in a cup constitute a galvanic cell.

The more the elements composing a galvanic cell differ in electrical potential, all other things being equal, the greater in direct proportion is the electro-motive force arising therefrom. For example, a cell constructed of zinc and carbon generates a stronger current than one constructed of zinc and copper.

Galvanic cells are constructed with regard both to cost and utility. Zinc is used almost exclusively as the positive element; carbon or copper as the negative. The cells in most general use are the Bunsen, Leclanche, gravity and dry, with their various modifications as made by different manufacturers. For all practical purposes, the *open circuit cell* is best suited for stationary office batteries, as there is but little action or deterioration of elements except when in use. The only disadvantage attached to it is that it cannot be used for any continuous length of time, since it requires rest to recuperate after an hour or more of constant use. Only a few minutes are required, however, to restore its activity. It is now the only cell used for stationary office batteries, where the direct incandescent current is inacessible.

The positive electricity arises from the zinc plate, passes through the fluid to the carbon, and out through the wire attached thereto, as the anode or positive pole, although it is the negative element. The wire attached to the zinc (the positive element) is the cathode or negative pole. When these wires are brought together there is formed a close circuit; when they are not connected there is an open circuit.

The Bunsen cell is composed of zinc and carbon ele-

ments, with dilute sulphuric acid as the exciting fluid and bichromate of potash to prevent polarization. It was for a long time the principal one used in galvanic and faradic batteries, but, being objectionable to use on account of the fumes and corrosive properties of the sulphuric acid, it has been supplanted by the open circuit cells. Besides, the Bunsen cell is troublesome to use, inasmuch as the elements must be removed from the fluid when not in use; otherwise they will be destroyed.

The open circuit cells (which include the dry, Leclanche, and their various modifications) of zinc, carbon, with muriate of ammonia as the exciting fluid, are the ones now in general use. They are less troublesome, require less repairing, and give a more constant current. The elements are not removed from the cups after using, and, with ordinary use, require attention less often than any other form of cell.

The Galvanic Battery.

When two or more cells are so arranged that the zinc of one is connected with the carbon of another, there is formed a compound circuit, or galvanic battery. The different kinds of cells are all similarly connected in this arrangement for a battery.

The Galvanic Current.

The current that flows through these various cells, when in proper connection, is known as the continuous or galvanic current. It is a current that traverses the circuit uninterruptedly and with a uniform strength varying in proportion to the power and endurance of the cells.

In considering the construction of the galvanic battery we must call attention to the two closely allied yet distinct forms of current capable of being generated by the batteries properly constructed for each. They are *intensity*

and *quantity* currents, or, in other words, the continuous current, as produced by an ordinary galvanic battery or dynamo and the cautery current.

By way of differentiating these two forms, and in order to demonstrate their distinct utility, let us imagine two streams of water taking their origin from two separate reservoirs at the top of a mountain. The reservoirs are equal in dimensions, and capable of an equal supply; they lie on the same level, and the descent of their streams is similarly gradual throughout their separate courses to the point where they diverge to turn water-wheels. Suppose that the orifice through which one of these reservoirs feeds its stream should become partly occluded. As a result the outward flow would be in a proportionate degree shut off. The accumulation of pent-up water would produce within the reservoir a pressure that in turn would cause the stream to gush forth with greater impetus. Sweeping along it would strike its wheel with much greater force, but, lacking the volume of the other stream, by reason of the occlusion at its source, would accomplish the same work differently.

So it is with the currents of the intensity and quantity batteries. The intensity current, by virtue of its cell construction (the elements being smaller and alternately connected, and the distance between these elements and between the different cells being greater), like the stream impeded at its source, is resisted in its flow from one element to another and also from one cell to another. Thus it loses in quantity but gains in impetus or intensity. This is the form of galvanic current employed in medical treatment.

The quantitative current, by reason of the proximity of its elements, the greater dimensions and exposure in surface of these elements, and the comparatively little resist-

ance offered in its course, like the unimpeded stream, flows through the circuit in greater quantity and gives virtually more power when used for motor or heating purposes. It differs from the intensity current in that its volume, passing through the circuit at a given time, is greater and more uniform, while that of the latter is less, yet more violent in form and of greater impetus.

If these two forms of the galvanic current were successively passed through a cautery knife, it would be discovered that while the current from the quantity battery would produce a white heat in the platinum blade, the passage of a current from an intensity battery would produce no perceptible effect and probably not even warm it. To explain this let us again refer to our illustration. Should the channels of both streams become similarly narrowed in their onward flow, it is evident that the stream whose progress had thus far been unimpeded would, by reason of its greater quantity of water, be more powerful; while the other, with far greater impetus, would again lack the volume to be of any avail. In flowing through the cautery knife, the quantitative current traverses a platinum wire, or blade, too small to carry the volume of current without great resistance in its passage; as a result the current at this point is impeded in its flow, compressed into less area, rendered more compact, and hence heats the platinum point. The intensity current, however, lacking in volume, is not rendered sufficiently compact to even warm the blade, and it is only when this is passed through an intensely resistant and equally slender film (as bamboo in the incandescent light) that the current will be sufficiently condensed to produce heat and light.

This is the reason why we cannot have a battery that will serve for both medical and cautery purposes without change of construction. An intensity battery may, how-

ever, be converted into a quantity battery by connecting all the zincs of the different cells to one another, so also joining all the carbons, and finally closing the circuit by connecting the first zinc with the last carbon. But this arrangement is impractical and never used.

Another simple illustration of the difference between the two currents is as follows: Suppose an ordinary hose, one inch in diameter, is attached to a water plug of great pressure, and the water turned on. While it would throw a stream of water some thirty or forty feet by means of the force exerted by the high pressure, yet should this stream of water be thrown against a water-wheel four or five feet in diameter, it would have no effect upon it. On the other hand, a stream of water two feet in diameter, of small force—even one-twentieth of that from the hose—if turned upon the water-wheel would, because of its volume and weight, begin to move it immediately.

The units of measurement of these two forms of electric currents will be hereafter given.

Construction of Batteries.

There is a great difference in the quantity of current generated by both the galvanic and faradic batteries. Very many bateries of cheap construction are annually sold to the profession and laity. The currents in these are so intensely irritating and irregular that it is impossible to obtain any uniform results by their use.

The quality of the galvanic current depends largely upon the cells used and the condition in which they are kept, while that of the faradic depends mainly upon the construction of the coil. In regard to the current as taken from the direct incandescent circuit, it is regular and invariable. Apparati are also constructed by means of which this current can be converted into great volume or

increased amperage, whereby it can be utilized for cautery purposes. This is first accomplished by means of a motor so constructed as to convert the direct into an alternating current, thence from the alternate by means of a second apparatus, called a transformer, into increased amperage, which can be used for cautery.

The Faradic Currents.

When a current from one or more cells passes around a bar of soft iron through an insulated wire, it magnetizes this bar or helix by induction. This remains magnetized as long as the circuit is closed, but is immediately demagnetized when the circuit is broken.

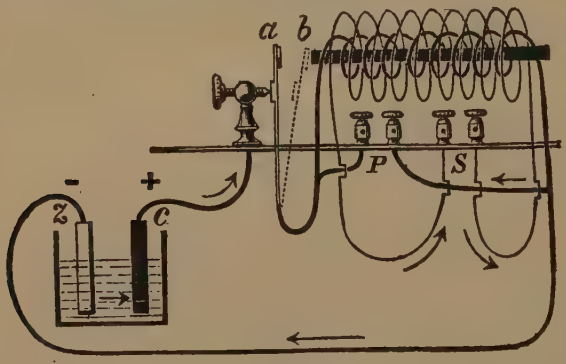

Fig. XXV.

Fig. XXV. illustrates the construction of a faradic battery, from which we obtain the induced or faradic currents.

By tracing the current from the carbon element *c*, following the arrow up to the post, out to the point of the screw, and from there down the spring *a*, to which is attached an insulated wire that passes up and around the bar of soft iron and back to *z*, we have a closed circuit which attracts the piece of iron attached to the spring at *a* and drawn it to *b*. In so doing it removes the spring

from the tip of the screw (as is shown by the dotted lines) and breaks the circuit at this point. The circuit being broken, the bar of soft iron becomes demagnetized, and, the induction in the coil of wire being severed, the spring flies back to its former position. As soon as the spring strikes the point of the screw, the circuit is again closed; but also as quickly broken when the bar of soft iron again becomes magnetized. Thus by rapid making and breaking of the circuit, a current is produced, which is synonymously termed the induced, faradic or interrupted current.

The Secondary Induced or Faradic Current.

If a second insulated wire is wound around this first or primary cell, but not connected with it, and the current is passed through the primary wire, there is generated at the same time in the superadded coil a second current which flows through it in an opposite direction. As this second coil is entirely independent of the first, so far as direct connection is concerned (the wire merely running from the right S, around the primary coil and back to the left post S), the current is therefore produced solely by induction, and is known as the secondary induced, faradic or interrupted current. As compared with the primary, it is much more intense, yet with great resistance interposed it is soothing and acts as an analgesic.

In regard to the question so frequently asked me, "What kind or make of battery would you advise me to get?" one should first decide whether the battery is intended exclusively for the office or for portable use also. A good galvanic battery, with sufficient number of cells to give desired force, must necessarily be cumbersome to carry around. One constructed with dry cells is lighter and more convenient; yet I would never advise the procuring of a portable galvanic battery for general use.

Units of Measurement of Currents.

Cells vary greatly in regard to their current, strength or electro-motor force, so that it would be very indefinite, in denominating the electro-motor force of a current, to speak of so many cells or such a cell power. In order, therefore, to express more definitely the force or current strength, certain units of measurement have been adopted. They are the volt, ampere, milliampere and ohm.

The volt is the unit of electro-motor force or pressure, as represented in a Daniel cell, which is taken as a standard and is usually designated by E.

The ampere is the unit of quantity or volume of current strength, and is designated by A.

The ohm is a unit of resistance, and is equal to that offered by the passage of a current through eight feet of No. 35 copper wire. It is designated by the letter R.

The milliampere is the unit of current strength that passes through one's body when applied thereto; it is represented by M.A. The resistance includes that offered by the milliampere meter, conducting cords, the electrodes and the body of the patient.

The resistance offered by the body varies in its different parts, and bears reference to its moisture or dryness; the mucous membranes offering the least resistance, and the palms of the hand, when dry, the greatest. The resistance of the current diminishes in direct proportion to the moisture of the surface of the body to which the electrode is applied, and also to the increased size of the electrode. By way of illustration, suppose we apply as indifferent electrode a sponge or spongiopiline, only one or two inches in diameter and moderately moist, to the palm of the hand; the resistance would be so great that scarcely any current strength would be registered upon the M.A. meter,

though fifty or seventy-five volts were brought into the circuit. Now suppose the same size electrode was rendered quite moist and the hand again applied as before, the meter would register slightly more and the hand would begin stinging and be rendered very uncomfortable; at the same time but little work or effect would be accomplished at the active electrode. On the other hand, suppose that an indifferent electrode is used, eight or ten inches in diameter instead of one or two, and well moistened, and that both hands are placed upon it; then fifteen or twenty volts brought into the circuit would diverge the needle of the m. a. meter more than thrice as much as when the small electrode was used; there would be no discomfort in the hands, and the active electrode would accomplish more than treble the work. It is, therefore, evident that a large electrode should always be used at the indifferent pole.

The different manufacturers of electric apparatus have so vied with each other in constructing cheap instruments to sell that a large majority of those placed upon the market give rise to more irritation in many instances than relief. It is impossible to procure uniformly good results with improperly constructed apparati. I have all my batteries, accessories and electrodes made to order, so that I know just what to expect from their use.

In the applications of any of the electric currents, except certain forms of the static, there must be a closed circuit with the patient's body. And in these applications there are always an active and an indifferent electrode. These are used with especial reference to the effect it is desired to produce. The active electrode is applied to the diseased organ or part affected, while the indifferent electrode may be placed in contact with any portion of the body that is most convenient.

In order to render the active electrode more efficient to a local lesion or diseased area, the electricity must be concentrated upon the part affected. To accomplish this all the other portion of the electrode must be insulated except that in immediate contact with the diseased organ. By this means the healthy tissue is protected from the electrolytic action of the current. The localized effect of the active electrode may be still further increased by counteracting the resistance interposed at the indifferent electrode. This may be accomplished by increasing the surface of the latter, and having it quite moist. The surface of the skin gives marked resistance to the passage of the current when dry. This can be overcome, for all practical purposes, by means of a moist and large size electrode. The latter should be at least six or eight inches in diameter.

The conductivity of any tissue of the body is in direct proportion to its moisture. Hence the mucous surfaces are much better conductors than the skin. The current passes from the positive to the negative pole and in the direction of the least resistance, which is usually the shortest route between the two poles. That portion of the body through which the electricity passes, except in the immediate vicinity of the poles, is very little influenced by the current, as it mainly acts as a conductor.

Physiological Effects of Electric Currents.

The properties of all electric currents, just as that of magnets, are limited at or near their poles. I do not mean that only that part of the electrode which is in immediate contact is active, but the activity is greatest when exerted nearest the pole, and, as it recedes therefrom, diminishes in direct proportion to the strength of the current used, and inversely as to the distance from the poles. This area may, therefore, vary from one to twelve or more inches. The polar effect of certain currents, however, may be

exerted upon an organ and transmitted to some remote part of the body. For instance, a nerve may be stimulated at or near its origin by the sinusoidal or the interrupted galvanic current, when the muscles to which it is distributed are made to contract several feet distant.

The effect of the anode of the galvanic current, aside from that of the electro-negative elements, is soothing contracts capillaries and acts as a hemostatic; while that of the negative is stimulating, dilates capillaries and tends to induce hemorrhage.

Labile or stable applications of the continuous galvanic current acts mainly by way of electrolysis, cataphoresis and its stimulating effect upon the skin and circulation at its poles.

The sensation of slight burning at either of these poles is due to the action of the chemic elements as result of electrolysis, and not to any heat in the electrodes, since there is no elevation of temperature in the latter.

The interrupted galvanic current is exceedingly stimulating to nerves, muscles or any organ to which it is applied. It is more penetrating than the induced currents, and is especially indicated in the treatment of the deep-seated organs. The rapid interruptions cause contractions and relaxation of the unstripped muscular fibers of blood vessels, which restores their tonicity, relieving thereby engorgement of congested organs.

The physiological effects of the faradic currents, both primary and secondary, are stimulating tonics. They have no chemic or electrolytic action, and they exert their tonic properties chiefly in a mechanical way. These properties might be likened to a gentle though rapid massage. While they have neither cataphoretic or chemic effect, yet their action favors medicinal absorption by mechanical excitation. By way of illustration, suppose a medicine is applied

to any portion of the body, its absorption can be facilitated by rubbing it within the skin. This illustrates the action of the faradic currents, except that they penetrate several inches within the tissue. The secondary induced current when applied with from ten to twenty-five thousand ohms resistance has marked analgesic effect. This is a property that is of special importance in the treatment of an exceedingly tender or irritable prostate, as it can be used through the rectum and applied directly to the gland. Relief from such treatment is often very noticeable and instantaneous. Its effect upon atonied vaso-motor nerves is quite pronounced. By restoring tonicity to the circular muscular fibers of the vessels the engorgement is relieved and inflammation reduced. These currents should never be given with sufficient force to cause pain or any uncomfortable sensation, for that counteracts the benefit that would accrue from their use.

These currents have a remarkable effect towards restoring tonicity to the genital organs when they have remained in a state of atony or impotency for so long a time that, even after the cause is removed, they fail to respond to normal conditions.

Dr. de Wattervill had advocated the use of the combined faradic and galvanic currents; but such has always appeared to me in the same light as a "shotgun prescription." I have always obtained better results by applying the currents for specific effects, and alternating them as occasion required; for instance, instead of giving the combined galvanic and faradic currents, as he suggests, for tonic purposes, I have always gotten better results by applying the faradic one day and the interrupted galvanic or sinusoidal the next.

While there is a marked difference in the effect of the poles of the galvanic currents (and they should always be

used with special reference thereto), yet the difference in the effect of the poles of the primary and secondary induced currents is so slight that it matters very little which pole is used as active or indifferent in treatment.

The sinusoidal is one of the most valuable currents at our command for restoring tonicity to any organ of impaired vitality. It also possesses in mild degree electrolytic, cataphoretic, germicidal and mechanical properties.

The rapid alternations of this current so act upon any molecular body within several inches of its poles that it magnetizes and demagnetizes the molecules composing the body, and, by the combined magnetic and mechanical properties of the currents, so change their relative molecular positions as to alter their tissue. These properties are especially effectual following the electrolytic changes as a result of interstitial cataphoresis.

Chemical Effects.

The galvanic current has the power of decomposing chemic compounds both within and without the body, and breaking them up into their original elements. This can be demonstrated by passing the current through a solution of potassium iodide, when iodine will appear at one pole and potassium at the other. So also may water be decomposed into its two elementary gases. This property renders the current of great value both in decomposing morbid products and eliminating them from the body, but it is limited in its effect to, or adjacent to, the poles. Hence, in applying the current, an active and an indifferent polar effect should always be taken into consideration. The active pole should be applied where it is desired to produce a specific effect, while the indifferent pole (usually a broad sponge, so as to spread the current over greater area, and consequently render it inactive at that pole)

should be referred to some remote part of the body. The greater the surface of the indifferent electrode, other things being equal, the more effective is the active pole. The large majority of physicians use an indifferent electrode of too small a size. It should not be less than eight inches in diameter.

In most morbid tissue formation, as in the fibrous deposit of stricture, and prostatic hypertrophy, the vital activity and reparative processes are much below normal and are especially subject to electrolytic action, whereby the electrolytes composing the tissue are decomposed into their original chemic elements and the parenchyma of the growth is destroyed.

Only certain compounds are capable of disintegration by means of the galvanic current, which are known as electrolytes. As, however, electrolytes form the chief constituents of the body, electrolysis is possible in any of its tissues, but more especially in morbid tissue of low vitality, that is incapable of reparation except by abnormal processes.

This property of the current is of advantage to the surgeon in the removal of morbid growths, especially in such parts of the body or under such circumstances where surgical procedure by any other means would be injudicious, and at the same time attended with no little amount of risk, on the part of the operator, to the life of the patient.

The products of this decomposition are called ions; those collecting at the anode, anions, and those at the cathode, cations. Frequently the actual ions are not given off as such, especially the anions, which often combine with other substances forming new compounds. As a rule, however, the ions proper to each pole may be distinctly recognized. In inorganic substances this may be easily

demonstrated by passing the current through sodium chloride; the anion will appear in bubbles at the positive, while sodium, the cation, will collect at the negative pole. Similar changes in organic substances may be produced by passing the current through a piece of meat, when firm albuminous coagula will form at the positive pole, and gases will be seen to escape at the negative. It will also be observed that the meat upon the side of the anode will be dry, while the other side will be moist.

As the tissues of the body are composed largely of water and salt, or chloride of sodium, the decomposition of these proximate principles by chemic action always results in the production of oxygen, chlorine or hydrochloric acid at the anode. The other constituents of the tissues are so insignificant as not to be taken into consideration. These elements (the anions) have a strong affinity for most all of the metals except platinum or gold. Hence, should a copper electrode be introduced into the urethra and attached to the anode, with a closed galvanic circuit, the oxy-chloride of copper would result. Should, on the other hand, an iron electrode be similarly used, chloride of iron would follow its use. When electrodes are used where the electro-negative elements attack and combine with them they are termed oxidizable electrodes; those not attacked by these elements are noted as non-oxidizable electrodes.

The electro-positive elements that occur at the cathode do not combine with any metal used as an electrode.

Polar Effects.

If an ordinary steel needle be attached to each pole of the battery, and, with a current adapted for electrolysis, an experiment be made upon a piece of meat, it will be noticed that the products accumulating around either of the poles will be entirely different from those surrounding

the other; that, while the one needle is readily withdrawn and entirely unaffected, the other will stick with great firmness, and, after being removed, will show effects of having been subjected to some chemic change. If now the two parts from which the needles were withdrawn be subjected to microscopical examination, it will be seen that the part from which the unaffected needle was taken shows evidence of molecular changes, and suggests the fact that some disorganizing process has lessened the normal compactness of its tissue; while in the other (anode) in which the needle was acted upon, it will be found that there is an increase of material surrounding the pole, due to the coagulation of the albuminous constituents, and that in consequence the tissue is by far more compact than normally. On testing the chemical reaction of these products, those of the coagulated tissue will be found to be acid, while the others are alkaline. These different phenomena are invariably proper to their distinctive poles, and if the needles are left intact and the poles reversed, their action upon the tissues of the meat will also be reversed.

The experiment demonstrates two distinct effects of the current, each of which may be taken advantage of, independent of the other, by the use of electrodes especially adapted to this end; and from it we may also deduce the following important principles of electrolysis as a guide to the use of the proper pole.

The positive pole coagulates albumen, causes fibrinous deposits and attracts electro-negative elements, such as acids, oxygen, chlorine, etc.

The negative pole, in drawing to itself alkalies or bases, collects atoms that have no tendency toward combination, but, being absorbed and carried away by means of the circulation, lessens the amount of tissue within the electrolytic field.

Electrolysis.

Electrolysis is the process of producing chemic decomposition and disorganization of tissue by means of the galvanic current. In all compound fluids, dissolution, either slight or in a marked degree, is constantly taking place by reason of the breaking up of the molecules composing the fluids into their primal atoms. Under normal circumstances nature provides for this disintegration by its various processes of waste and repair, and no perceptible changes are effected. Experiments demonstrate, however, that by the aid of the electric current this normal decomposition can be promugated to such a degree that nature will be able no longer to counterbalance the overdrain upon her recuperative powers, and hence there will be a loss of compounds and subsequently of constituents in the parts where the high amount of dissolution is made to take place. This change occurs more readily and to a greater extent in morbid tissue because of its defective vital activity and its poor nutritive supply.

Cataphoresis, or Electric Osmosis.

Cataphoresis is the process by which fluids are transfused through animal tissue by means of the galvanic current. The passage takes place mostly in the direction of the current, viz., from the anode to the cathode, or from the positive to the negative pole. In order to pass by this process, all substances must be in a state of solution. Thickness of animal tissue is no barrier to the passage of fluids as induced by this means.

Diffusion of medicines by means of the galvanic current is not new; it has been demonstrated by various physicians both in this country and in Europe. But it is only within the past decade that it has been systematically used and with a knowledge of its actual effects.

T. A. Edison read a paper before the International Congress at Berlin in August, 1900, in which he reported a case where he had employed cataphoresis for gout, showing that the current carries lithium salts into the body and gives great relief to a swollen joint. His method was to put one hand into a vessel containing a solution of chloride of sodium, in which the cathode was inserted, and the other into a vessel containing chloride of lithium, in which the anode was inserted. The lithium salt passed into the body, being detected afterward in the urine.

As I have previously stated, the action of the currents, just like that of a magnet, is limited to their poles, and there is a middle line of neutrality between the poles.

Fluids, therefore, do not pass entirely through the body by means of cataphoresis, but having penetrated the tissues at the poles they may be absorbed and enter the general circulation, as has been demonstrated by Edison and others.

Medicines applied by the active electrode directly opposite and in close proximity to diseased organs penetrate them thoroughly, those nearest the pole becoming saturated with the medicine.

In order to procure the best results in the way of cataphoresis, unoxidizable electrodes, as platinum or gold, should be used; otherwise the electro-negative elements, as oxygen and the acids, would attack the metal and form new compounds at the anode, lessening thereby the cataphoric action. With reference to the use of the cathode, it does not matter what metal is used, as hydrogen and the alkalies do not combine with it. Electrolysis and cataphoresis are always, to a limited extent concomitant, yet when an electrode is used that is not attacked by the electro-negative elements cataphoresis is more marked.

Sulphuric, phosphoric and hydrochloric acids always

appear at the anode when applied to animal tissue, though the latter (hydrochloric acid) is in greater abundance. There is a tendency of the anode to stick closely to animal tissues when applied with an oxidizable electrode, such as copper, zinc or iron. This is due to the action of the electro-negative elements upon the metals, forming new combinations that adhere firmly to the tissue. In order to release the electrode, the current is reversed for a few minutes, when it again becomes loose and can be withdrawn. These elements are somewhat irritating to the tissue. They sting to an extent dependent upon the strength of the current used, but do not, as many believe, burn or cauterize the parts.

While it is evident that electrolysis takes place in the large majority of remedies of multiple elements in the process of cataphoresis, yet some of the medicine passes with the flow of the current without being chemically changed. This is in accordance with the law of attraction and repulsion of atoms as induced by magneto-electric properties—that unlike attracts and like repels.

So complex are the analytic and synthetic changes that occur in the tissues and remedies, as the result of the electrolytic and catalytic actions of the galvanic current upon them, that in many instances it has been only by numerous experiments that I have been able to determine just what chemic changes take place, and, in view of these changes, to select the best remedy for certain conditions and complications.

In the use of any medicine for cataphoresis its chemic elements should be known, unless one decides upon a blind experiment or groping in the dark.

Electrolytic action may be expected, at least to some extent, and some of the medicine used is decomposed into its chemic elements; so, instead of getting the effect of

the medicine as used, one gets that of one or more of its chemic elements. Let us take iodide of potassium for illustration, it being an electrolyte, and suppose the active electrode to be an unoxidizable metal, as platinum; then there could be no chemic action upon the latter by any of the elements set free by electrolysis. Now suppose we use the cathode as the active electrode; the iodide of potassium would be decomposed into iodine and potassium, and iodine, being the electro-negative element, would tend toward the anode, which would be the indifferent electrode, and if the cathode is in apposition to the prostate the iodine must necessarily pass through the gland before reaching the neutral point between the electrodes. But suppose, on the other hand, that the anode is used as the active electrode; then the greater part of the iodine, as a result of the electrolytic action, would remain at the pole, and only a limited amount of it, together with the electro-negative elements, as potassium, hydrogen, etc., would be diffused through the gland on their way toward the cathode, and but little change would take place within the gland as a result of interstitial electrolysis, by means of these elements alone.

The action of the poles of the galvanic current does not destroy tissue as does the cautery, unless the cautery current especially devised for that purpose is used; but when applied to any part of the tissue, it decomposes it into its original chemic elements. The tissue, possessing no longer its normal anatomical constituents, becomes atrophied, and the parts disorganized are absorbed, as stated before. More especially do these changes take place in morbid tissue, defective in vital activity or recuperative power.

As water and the chlorides of sodium, potassium, etc., constitute a large part of all tissue, oxy-chlorides are always present at the anode when galvanic applications are

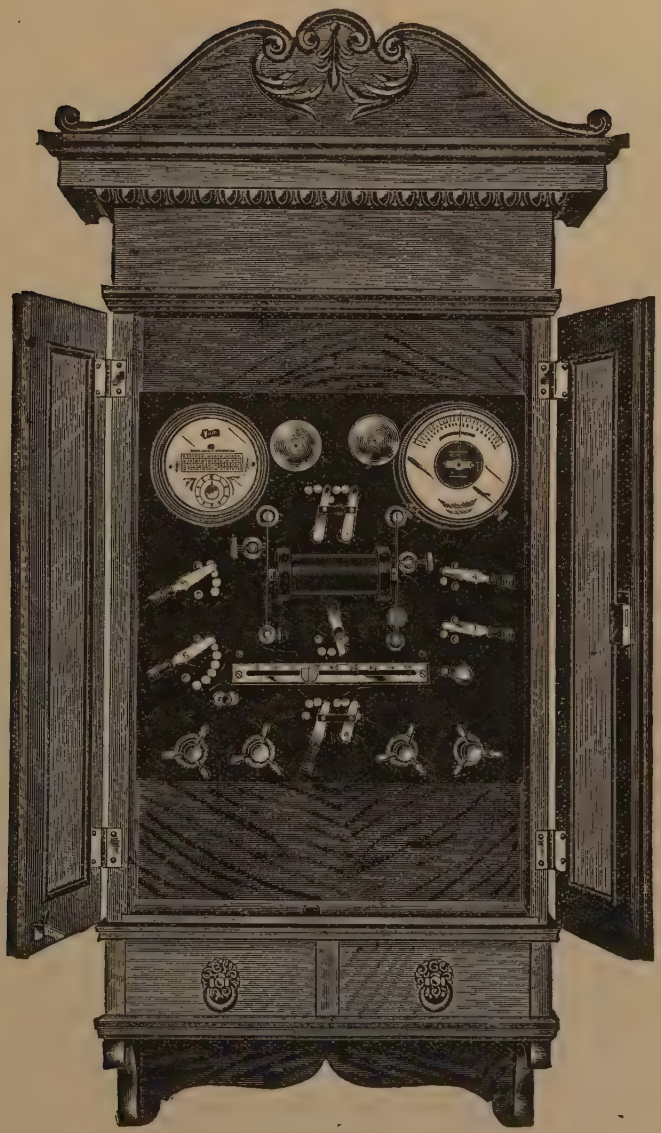

Fig. XXVI.

made; and, as these constituents have a strong affinity for metallic bases, they will attack any oxidizable metal used as an electrode for that pole, and form new compounds, even when medicines are not used. For example, should a solid copper electrode be applied to the prostatic urethra, the oxy-chloride of copper results. I often use this treatment, alternating with other remedies, when there is a rebellious tendency of the parts to healing. In some cases it has an almost magical effect, when the parts have resisted all other applications. If it is used very strong or for a long time, it causes a sensation of stinging or burning, due to the action of metallic electrolysis, and not to heat in the electrode, as might appear. *For there is no elevation of temperature in the electrode.*

It should be remembered that the electrode thus used will adhere tightly to the tissues. It should not be forcibly removed; but when the current is reversed, as before stated, the electrode slides away with ease.

While a thorough knowledge of the properties and therapeutic action of the different electric currents are prerequisite to successful treatment of the prostate, yet it is impossible for one familiar with these to procure satisfactory results without suitable apparatus. Manufacturers have so vied with one another in placing cheap electric paraphernalia on the market that therapeutic failures are often traceable to trashy apparatus. Especially is this true since so few physicians have any knowledge of electro-physics and can tell when a battery, coil, rheostat or any other part of the outfit is properly constructed, but must rely upon what the manufacturer tells them. Fig. XXVI. illustrates a wall cabinet for use on the direct incandescent circuit that is as near perfect as is made. The resistance is effected through metallic wire and not graphite, and it is uniform, durable and reliable. It has a perfectly regu-

lated galvanic current, varying in force from a fraction of a volt to any desired strength required, which can also be used for lighting diagnostic lamps. It has the primary and secondary faradic currents, galvanic interrupter, etc.

I have my sinusoidal apparatus wound specially to order in shunt, as before described.

CHAPTER XX.

The Uses of High Frequency and High Potential Currents in the Treatment of Prostatic Diseases and Sequelae.

In discussing this subject, I shall avoid all theoretical views, of which there are many, neither shall I tax my readers with a long, tedious history of its development and therapeutic progress; but I shall endeavor to demonstrate its properties and therapeutic uses in as plain, practical and concise manner as is consistent with a clear elucidation of the subject.

The profession are indebted to Nikola Tesla for the discovery of this most valuable therapeutic agent. It was in February, 1891, that he, by certain multiple windings, charging and discharging of leyden jars by means of alternating currents, was enabled to convert strong and comparatively frequent currents into currents of extreme high frequency—even to ten thousand interruptions per second. He further proved that it was possible to transmit such a current of ten thousand volts through one's body with impunity. But it remained for Oudin, d'Arsonval, Rochefort and others to take up the current at this stage, and by means of accessories, by way of resonators, solenoids, condensors, interrupters, detonators, etc., they have been enabled to increase the interruptions or oscillations and tension of the current to almost an inconceivable degree: so much so that I even hesitate to state that these interruptions or oscillations have been calculated above the million per second. In fact, the more frequent the interruptions and the greater the tension of the current, the less danger

and more soothing to the organs to which applied. A current may be passed through one's body, of such high degree of tension as to cause a brilliant glow of a sixteen candle power lamp held several inches from the person, without creating any other sensation than that of an exhilarating warmth.

But as I propose dealing only with the practical consideration of the current with reference to prostatic diseases, I shall refer those desirous of investigating along this line still further, to Freund, on High Frequency and Radio-Therapy. Permit me to caution those contemplating procuring high frequency apparatus, not to be persuaded by interested manufacturers to get a coil with spark less than twelve inches. Then a good resonator with solenoid is indispensable when the tension and volume of the current may be so modified as to meet all therapeutic indications in so far as the capability of this current is concerned. Should you have a good static outfit, a resonator constructed to use with it will greatly enhance its value.

The fact that a high frequency current brought in contact with morbid tissue will affect it is axiomatic. There are at least three ways by which change in the tissue takes place. The generation of ozone is unquestioned, and its effect toward converting an unhealthy, ulcerated surface into a healthy one is indisputable; besides being one of our most efficient germicides. Secondly, the rapid vibrations effecting molecular disturbance within the tissues is evident. The favoring of osmosis, either by cataphoresis oscillations or rapid bombardment of the molecules of the tissues, is proven daily. Then, too, it does arouse to renewed energy lethargic organs, stagnant circulations and devitalized nerves. It thereby fosters nutrition and assists nature. One of its greatest fortes is in reducing acute inflammation, allaying local irritation and congestion, and, that it

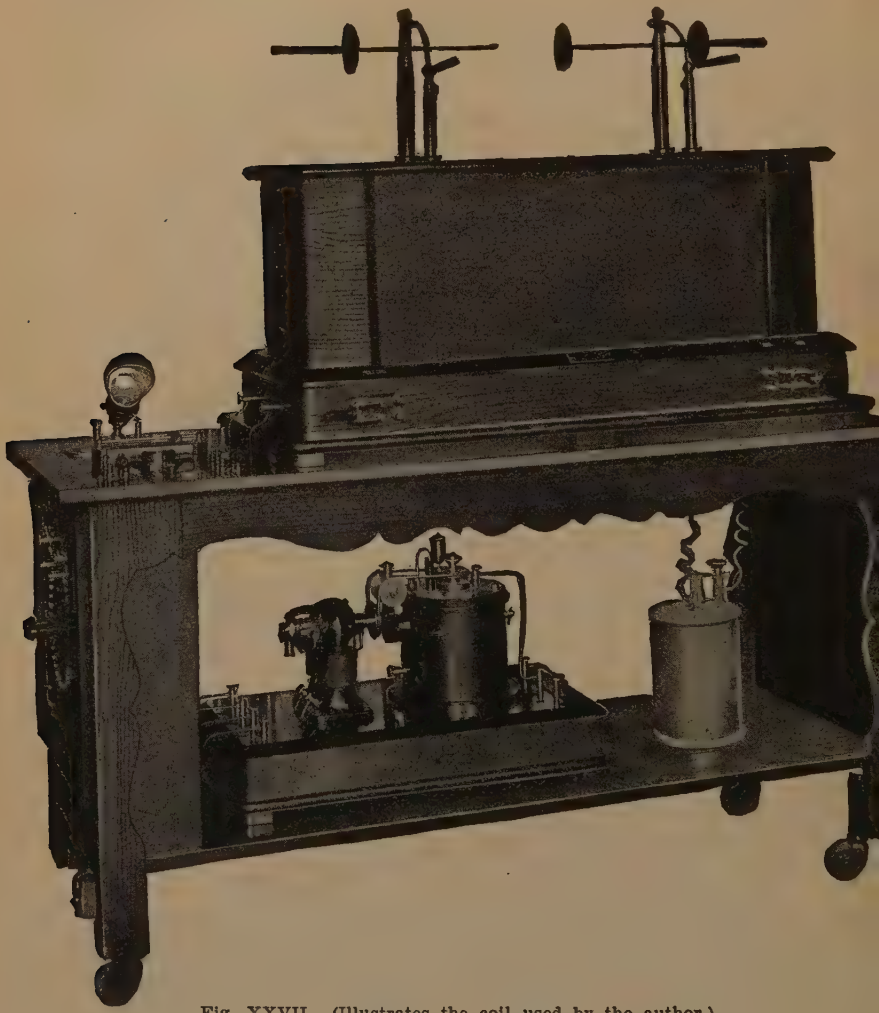

Fig. XXVII. (Illustrates the coil used by the author.)

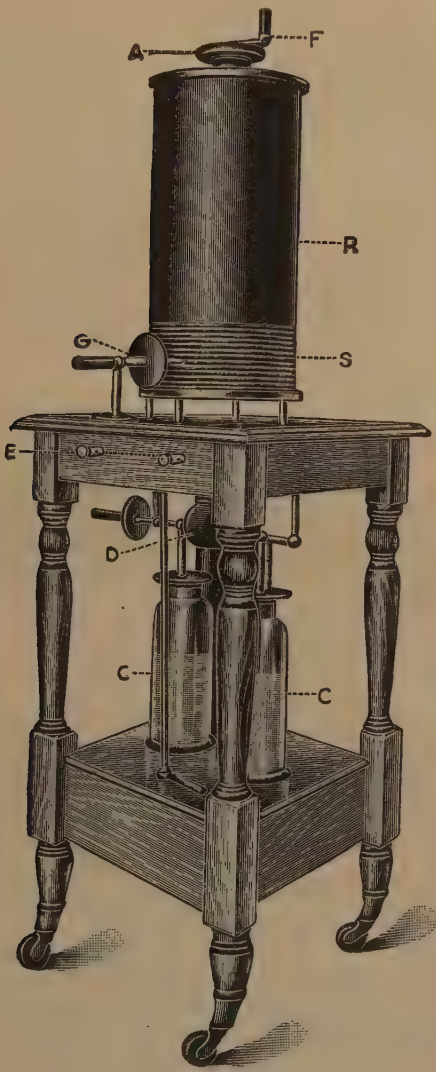

Fig. XXVIII.

dissipates morbid tissue to a certain extent, I have demonstrated time and again. It is slow in its action and takes time and patience, as in the majority of the cases, having come under my observation, have had trouble for many years.

I shall not attempt description of the various types of resonators and solenoids in common use, but will give brief outline of one of the most modern and convenient of which I myself use. Fig. XXVIII. illustrates the apparatus devised by Oudin, Dean and d'Arsonval:

(R. Resonator); (S. Solenoid); (D. Detonator or spark gap); (C.C. Condensors); (G. Spring clip); (A. Attachment of conducting cords (co) to resonator); (E.E. Attachment of cords for free resonance).

As it is a well known fact that there are no non-conductors, and more especially with reference to currents of high frequency or high potential, yet glass or rubber is the most common of materials used for insulation. Glass tubes (Fig. XXIX.)

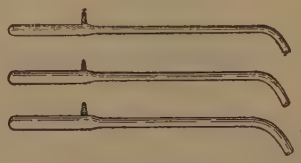

Fig. XXIX.

of partial vacuum are the only ones that have been in general use in the treatment of prostatic and vesical troubles. But as the glass tube is equally conductile throughout its entire length, the current intended to be applied directly to the prostate by means of this tube is so distributed along the urethral canal that it has become so exhausted before reaching the prostate that its effect upon the gland or vesical neck is quite limited. To obviate this waste and to

concentrate the current upon the part affected, I have constructed an instrument (Fig. XXX.) that is insulated with vulcanized rubber throughout its course, except at the cord attachment and the other extremity. The current, obeying the well known physical law of passing where there is the least resistance, can be concentrated at any point desired by the operator. The instrument is also so constructed that medicinal applications can be made at the same time the current is used, either to effect cataphoresis or as a simple medicinal application to the diseased area. Hence, by means of this electrode, the current as well as the medicine can be concentrated directly upon the gland. Fig. XXXI. illustrates the application of the instrument directly to the prostate:

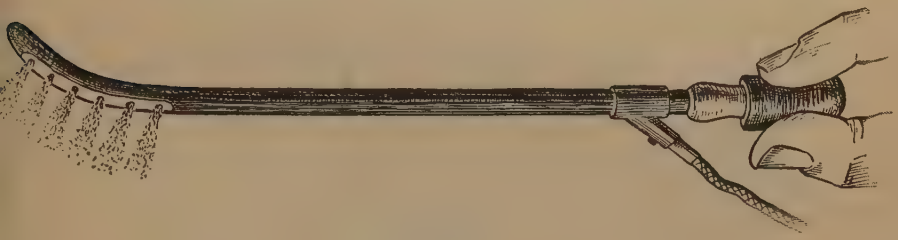

Fig. XXX.

The method of application I have found most effectual towards allaying local irritation and inflammation of the prostate by means of this current, is that of forced resonance of extreme high tension. This is accomplished by using a single insulated conducting cord attached to A, (Fig. XXVIII.), then connected to the urethral electrode and with the spring clip on the top coil of the solenoid (S.). Should it be desirous to increase the amperage or volume of the current in its application to the gland, then the solenoid should be interposed together with the resonator. This is accomplished by lowering the spring clip (S.) to the mid-

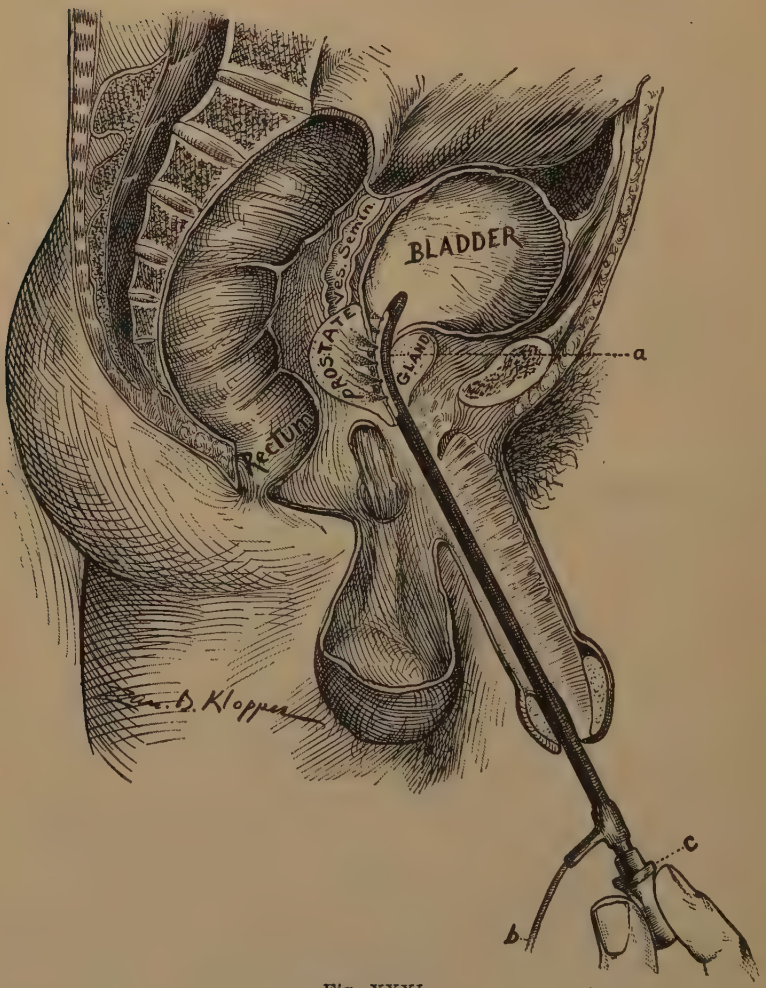

Fig. XXXI.

dle or lower coil of the solenoid. This last application is more efficient in reducing or softening an indurated gland; then, too, for destroying large vegetative growths. But it should not be used until local irritation and inflammation should be first allayed, as before mentioned, when it can be instituted with impunity.

The application by free resonance is effected by attaching one of the cords to binding post (E.), then to the electrode in application to the patient, with another cord passing from the other binding post (E.) and grounded; or in direct application to the patient's body with very large and very wet electrode. Should this not be very carefully observed the patient may be burned very severely.

The current is also used in application to the prostate through the rectum, just as the other currents as heretofore described.

The Treatment of Stricture of the Urethra by Electrolysis.

As stricture of the urethra is one of the frequent complications of prostatic troubles, I shall append hereto a brief outline of its proper treatment.

Conservative surgeons have always advised dilatation as the first mode of procedure, since, if properly used, there is much less danger than by incision or divulsion. But dilatation is limited in its action, and is generally practised for only temporary relief.

One of the most essential requisites before the use of electrolysis is to prepare each case properly before attempting the operation. Individual cases vary so much in regard to tenderness, irritation, amount of granulation, consistence, and length of existence, that it requires considerable

experience to decide how to prepare and when to begin operation.

As I have heretofore described in detail the methods of allaying local irritation and inflammation of the urethra, I shall refer my readers to the chapter on that subject. The technique of the operation is as follows: A large sponge or carbon electrode, being attached to the cord, which is previously fastened to the anode of the battery, is placed within easy access of the patient. The minimum strength of the current is then interposed in the circuit, and the urethral electrode, being attached to the cord from the cathode, is passed down to the stricture. (See Fig. xxxii.)

The patient then takes up the large electrode and holds it firmly in his hands. The current can be increased gradually to the desired strength without interrupting its flow.

The susceptibility of individual cases varies so greatly that I would always advise the use of the mildest current and the shortest duration in the first few treatments. Whenever there is indication of pain, it should be discontinued at once. I seldom use local anaesthesia, not even in nervous patients with excessively hyper-aesthetic urethras. The sensation is one of the best guides to the force of the current used and the length of time it is to be continued. It must be remembered that the current can be used longer and stronger near the meatus than in the lower urethra. The farther you recede from the meatus, in direct proportion thereto must caution be used.

The removal of the electrode from the urethra must be accomplished in the same way as its introduction. The patient must put aside the hand electrode, or catch it by the insulated handle, when the urethral electrode can be withdrawn without shock or pain. If this precaution is not followed and a shock is given, the patient never forgets it,

and will always be nervous and uneasy at each successive treatment.

I usually begin with a current strength of three milliamperes, of from two to three minutes' duration. Should it not be followed by any local irritation, or but very little, it could be increased at the next treatment to five or six milliamperes, and for five minutes. In some callous cases I have used a current strength of ten to fifteen milli-

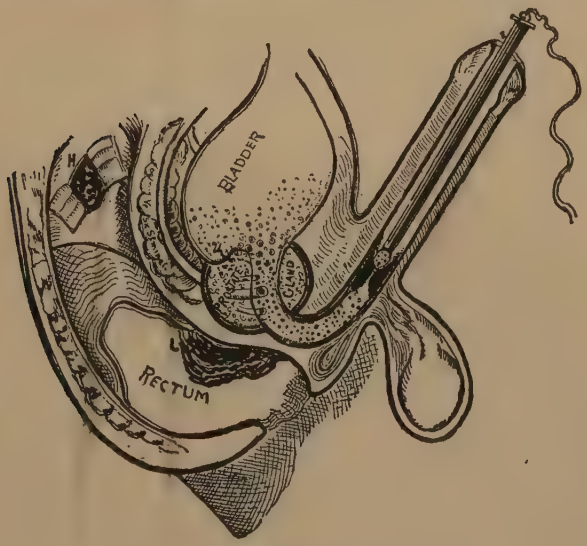

Fig. XXXII.

amperes, should it not be attended with pain or hemorrhage.

Fig XXXII. illustrates the author's method of removal of stricture by electrolysis.

Rectal ulceration on its anterior surface, and from one to two inches within the anus (as L), is common; and lying in close proximity and opposite the prostate, aggravates

any inflammatory condition of the latter. I have occasionally met with ulceration high up in the rectum (as H). Such ulcers may have been present for a long time with little or no subjective symptoms being manifest. Ulcers in the lower part of the rectum are generally attended with constipation, owing to reflex contraction of the sphincters that they induce. When such ulcer exists, it is almost impossible to relieve prostatic irritation without first relieving the ulcer.

I usually make my applications about every five or six days, but am governed, of course, by conditions and complications that may arise. I never use now, an electrode smaller than No. 14 or 16 French, as it is liable to be passed into the orifice of a lacunae or caught in a fold in front of a stricture and cause a false passage. This precaution should especially be observed by a neophyte. A large electrode will decompose and enter a stricture more satisfactorily than a small one, and with less pain. A small one is more liable to cause some trouble, and especially in the membranous or prostatic urethra. I have often treated strictures, even in the deep urethra, so contracted as not to admit the passage of the smallest size bougie, and where the urine would only pass in drops; when, on the second or third day after the electric treatment, and, too, without passing the stricture with the electrode, the urine would suddenly burst out in a bold stream, preceded by the forcible ejection of a plug of the strictural mass, which had evidently been detached by the effect of the current. At times this has occurred after the first treatment, though generally after the second or third.

I pass a bougie once or twice between each electric treatment, and never use one that does not pass easily and without force. Some speak of the treatment as cauterizing or burning out the stricture. There is no heat, not the

slightest elevation of temperature in the electrode; hence there could be no cautery or burning. The process is one solely of chemical decomposition and disintegration of the strictured mass, which passes off as gases, discharges and even at times of large particles of the strictured mass itself.

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